

The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus, eight new species and one new subspecies (Lepidoptera: Erebidae: Arctiinae: Lithosiini)

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Abstract: A review is given of the *Cyana* Walker, 1854 species occurring in New Guinea and adjacent islands. Three subgenera are recognized in the region of which one new to science: Subgenus *Cyana* Walker, 1854, *Clerckia* Aurivillius, 1882 and *Cryptanaema* subg. nov. A total of 23 species are found in New Guinea and nearby islands of which 8 new species were discovered and are described here. Subgenus *Cyana* is represented in New Guinea by 2 species of which *binigrofasciata* sp. nov. is new to science. Taxon *Clerckia* is retained from synonymy and considered to be of subgenus status and is represented in New Guinea by 8 species of which 3 are new to science: *posthyalina* sp. nov., *dentimarginata* sp. nov. and *simonthomasi* sp. nov. On the other hand two genera are synonymized: *Exotrocha* Meyrick, 1886 syn. nov. (type species *liboria* Stoll, 1782) and *Sphragidium* Butler, 1887 syn. nov. (type species *miles* Butler, 1887) and are considered to be junior synonym of *Clerckia*. The new subgenus *Cryptanaema* subg. nov. is almost exclusively occurring in New Guinea (one species occurs in Queensland, Australia) with 13 species of which 4 are new to science: *albimarginalis* sp. nov., *molbakon* sp. nov., *zwieri* sp. nov. and *gracilis* sp. nov. One new subspecies is described: *Cyana* (*Cryptanaema*) *melanoplagia extrema* ssp. nov. 10 taxa are synonymized and one is a rejected senior synonym: *Chionaema tricolor dampierensis* Rothschild, 1916 syn. nov., *Chionaema tricoloris* Strand, 1922 syn. nov. and *Chionaema acutipennella* Röber, 1925 syn. nov. are junior synonyms of *Chionaema postdivisa* Rothschild, 1913 (= *Cyana* (*Clerckia*) *tegyra postdivisa*). *Chionaema dinava* (sic) *vulcanica* Rothschild, 1916 syn. nov. is a junior synonym of *Dyphlaebia tricolora* Butler, 1877 (= *Cyana* (*Clerckia*) *tricolora*); *Chionaema dinawa* Bethune-Baker, 1904 syn. nov. is a junior synonym of *Clerckia fulvia trigona* Rothschild, 1903 (= *Cyana* (*Clerckia*) *trigona*); *Chionaema bicolor* Rothschild, 1913 syn. nov. and *Chionaema croceizona* Hampson, 1914 syn. nov. are junior synonyms of *Clerckia thoracica* Rothschild, Jordan, 1901 (= *Cyana* (*Clerckia*) *thoracica*); *Chionaema nigromarginata* Rothschild, 1936 syn. nov. from New Britain is a junior synonym of *Chionaema flavicaput* Gaede, 1925 (= *Cyana* (*Clerckia*) *flavicaput flavicaput*); *Scaptosyle aroa* Bethune-Baker, 1904 homonym nov. is a homonym of *Chionaema aroa* Bethune-Baker, 1904 in the subgenus *Cryptanaema*, and is a rejected senior synonym of *Chionaema nigroplagata* Bethune-Baker, 1910 (= *Cyana* (*Cryptanaema*) *nigroplagata*); *Chionaema nigrescens* Rothschild, 1913 syn. nov. is a junior synonym of *Chionaema charybdis* Bethune-Baker, 1904 (= *Cyana* (*Cryptanaema*) *charybdis*) and finally *Chionaema melanochlorus* Rothschild, 1916 syn. nov. is a junior synonym of *Chionaema fumea* Hampson, 1900 (= *Cyana* (*Cryptanaema*) *fumea*). All species are reviewed and redescribed and the adults and genitalia are depicted.

Key words: Review, *Cyana*, *Clerckia*, *Cryptanaema*, New Guinea.

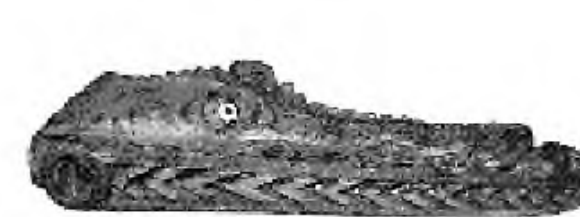
Introduction

The genus *Cyana* Walker, 1854 comprises about 200 recognized species of which the majority is distributed in the Indo-Australian region and a smaller part in tropical Africa.

It is a genus which has been subject to confusion, splitting and lumping for a long time by many authors. At the moment no less than 10 synonyms

are known for the genus *Cyana*.

The frequently used synonymic name *Chionaema* was often wrongly referred to Herrich-Schäffer, 1850 where in fact it should be 1855. This caused many times shifts in presumed validity and synonymy of respectively *Cyana* (1854) and *Chionaema* (1850/1855). However, Roepke (1946) and Roesler & Küppers (1976) showed that *Chionaema* is in fact published by Herrich-Schäffer in 1855 and



thus a junior synonym of *Cyana* Walker, 1854.

Most species in Africa and Southeast Asia have a white appearance with orange-red and black transverse lines in all kinds of variations and combinations, often together with one or some more or less distinct discal spots. Some species have more complicated and colourful pattern like in The Philippines and near the Himalayas. More eastward from the Moluccas to the Solomon Island species have a more cryptic pattern or are dominantly orange-red with black rims. The diversity in pattern resulted in the past in grouping the species in separate genera, by some lumped or split again in one or more genera. Even after study of the genitalia the confusion remains. When focusing on genitalia structures alone the genus would fall apart in numerous pieces while we don't really understand what kind of process is behind this variation.

Among others Roepke (1946), Roesler & Küppers (1976) and Holloway (2001) give a clear view of the variable and complex genus which, according to them, can at the most be divided in species groups. Karisch (2013) splits in his comprehensive revision of the African species the genus in many subgenera, mostly retaining already existing synonyms, but by doing this only adding to the confusion and using all kind of (plesiomorphic or apomorphic) variations and structures possible to confirm this. Holloway (2001), following Nielsen et al. (1996), states that the many different structures found in genitalia and wing pattern should be considered to be secondary sexual features within the range of variation of the genus *Cyana*. And indeed, having studied all known species from New Guinea, the variation in wing pattern and genitalia structures are quite variable, sometimes not matching with the logical grouping of the species after external characters.

For the moment it seems wise not to split the genus *Cyana* in other genera without understanding what kind of grouping is justified. Therefore more study material is necessary.

Variation or not, there are some characters that hold the genus in general together. The most distinct feature is the androconial pouch just behind the costa or on the costal rim of the forewing of the males which in most cases disforms the costal rim to a knot or pocket. The male genitalia form perhaps the less reliable features to hold the genus together, although the cornuti on the vesica of the aedeagus may indicate species groups or subgenera within the genus as do some structures of the valvae, but the female genitalia on the other hand show more uniform characters, having a large ap-

pendix bursa in all species, in some species even larger than the bursa copulatrix itself. The size and shape of the cervix bursae and the number and position of the signa on the bursa copulatrix may be strong distinguishing characters again for species groups.

Following Holloway (2001) applying, "seek to identify distinct groupings within the complex as a first step to elucidating relationships", an attempt is made in this review to group apparently allied species from New Guinea into subgenera. In this review the number of subgenera is limited to three and in the almost endemic new subgenus from New Guinea still some species groups are recognized. It is premature to understand the status of these species groups (i.e. being (sub)genera or not), more research with more material and modern techniques is necessary.

Finding new species apparently is inevitable when studying insects from such a still poorly explored area as New Guinea, not only in collected material from remote areas that are just recently accessible but also in old collections, having been overlooked for many decades. In this review no less than 8 new species of *Cyana* are described out of totally 23 known species from New Guinea until now, and probably more will follow in the near future.

Materials and methods

The studied material is stored in the collections of The Natural History Museum in London (United Kingdom), Naturalis Biodiversity Center in Leiden (The Netherlands) and Koleksi Serangga Papua in Waena (Papua, Indonesia). Of all studied species the genitalia were dissected, prepared and depicted when available.

The dissected genitalia are put in cold KOH 10 % for one night. After washing and cleaning from fat, scales and dirt in 30% alcohol the genitalia were stained in a solution of chlorazol-black in 30% alcohol and affixed in 95% alcohol. Then the genitalia were prepared for preservation in Euparal Essence (to prevent air bubbles) and after a few minutes put on a glass slide in a few drops of Euparal medium on the standard as used in the Natural History Museum in London: abdomen on left side, genital armature top right, aedeagus bottom right. To prevent the smaller parts, like aedeagus, from floating the Euparal drops were left to dry at least 24 hours without glass cover in a closed petri-dish (to protect against dust). The next day a proper



sized glass cover was put on the preparate in the sticky Euparal with addition of a few fresh drops of Euparal. This complete preparate is left to dry for weeks to months in the petri-dish. Proper slide labels are added after completely drying, so therefore it is necessary to write preparate number and details on the petri-dish cover and to scratch the number on the glass slide to avoid mixing up with other drying slides.

Slides were studied with a WILD M3 binocular microscope with magnifications 60-400x. Digital photographs were made with a motorized Zeiss V20 binocular microscope and a digital Axio MRc5 camera controlled by Axiomanager M2 software.

Forewing lengths were measured with a digital caliper from forewing base to apex, numbers were rounded to 0.5 millimeters. The taxa are as far as possible listed systematically or in geographical order from west to east.

Abbreviations used in the text:

mm – millimeters;

BM – initial for “British Museum”, Natural History Museum, London, United Kingdom;

RV – initial for “Rob de Vos”, preparator of genital slides;

BMNH – Natural History Museum (former British Museum for Natural History), London, United Kingdom;

KSP – Koleksi Serangga Papua (former collection of Br. Henk van Mastrigt), Waena, Papua, Indonesia;

RMNH – Naturalis Biodiversity Center (former Rijksmuseum voor Natuurlijke Historie and Nationaal Natuurhistorisch Museum), Leiden, The Netherlands;

UNCEN – Universitas Cenderawasih, Waena, Papua, Indonesia;

ZMA – Naturalis Biodiversity Center (former Zoölogisch Museum van Amsterdam), Leiden, The Netherlands.

Taxonomic part

Cyana Walker, 1854

Type species: *Cyana detrita* Walker, 1854

Subgenus **Cyana Walker, 1854**

= *Bizone* Walker, 1854

Type species: *perornata* Walker, 1854

= *Doliche* Walker, 1854

Type species: *gelida* Walker, 1854

= *Isine* Walker, 1854

Type species: *trigutta* Walker, 1854

= *Chionaema* Herrich-Schäffer, 1855

Type species: *puella* Drury, 1773

= *Macronola* Kirby, 1892 (unnecessary replacement name for *Cyana* Walker, 1854)

The nominotypical subgenus is by external characters distinguished by mainly white species with reddish or yellow transverse lines, sometimes bordered black, and with one, two or three discal spots or none at all. Species with broader transverse bands or with more coloration are present in this group. In fact there is a wide variation in genitalia structures but the basic construction is that of typical *Lithosiini*, elongated with a long extended sacculus with a sharp curved thorn, sometimes the valves being divided into two equal halves. The vesica of the aedeagus in most cases has numerous needle shaped cornuti in one bunch distally. Females with a sclerotized cervix bursae and a large globular bursa copulatrix with usually two signa, accompanied by an almost equal sized appendix bursae, with only slightly or no additional sclerotization of the bursa surface other than the signa.

Subgenus *Cyana* comprises the majority of the species in the genus and is widely distributed in Africa, Southeast Asia to The Philippines, Sulawesi and with only two species in the Moluccas: *Cyana* (*Cyana*) *pura* (Van Eecke, 1926) (Buru) and *Cyana* (*Cyana*) *impunctata* (C. Felder, 1861) (Ambon), and two species which are probably the easternmost representatives of the typical subgenus: *Cyana* (*Cyana*) *transfasciata* (Rothschild, 1912) and *Cyana* (*Cyana*) *binigrofasciata* sp. nov., both from New Guinea. It is out of the scope of this review to mention all other numerous species of this subgenus from western regions. African species are treated by Karisch (2013), Oriental species are partly treated by Roepke (1946), Roesler & Küppers (1976), Cerny (1993), Holloway (2001) and in numerous smaller publications by many authors.

Some authors also treat the Australian *Neobrocha* Meyrick, 1886 and African *Lexis* Wallengren, 1863 to be included in the list of synonyms but these are here considered valid genera. Both are in wing shape as well as in genitalia structures clearly different from *Cyana*.

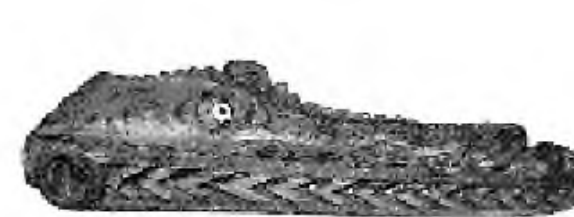
Checklist of *Cyana* (*Cyana*) from the Moluccas and New Guinea eastwards

pura (Van Eecke, 1926) [Buru]

impunctata (C. Felder, 1861) [Ambon]

transfasciata (Rothschild, 1912) [Papua]

binigrofasciata **sp. nov.** [Papua]



Descriptions of the New Guinea species

***Cyana (Cyana) transfasciata* (Rothschild, 1912)**

(Plate 126 figs 1-2, plate 133 figs 1-2, plate 139 figs 3-5)

Lectotype ♂ BMNH [designated here from syntype series]: nr. Oetakwa R., Snow Mts., Dutch N.G., up to 3500 ft., x.xii.1910 (Meek).

Paralectotypes 1♂ & 1♀ BMNH: nr. Oetakwa R., Snow Mts., Dutch N.G., up to 3500 ft., viii.1910 (Meek).

References: *Ilema transfasciata* Rothschild, 1912. *Novitates zoologicae* 19 (2): 222; Draudt (1914: 208), as *Lithosia transfasciata*; Strand (1922: 586), as *Eilema transfasciata*; Strand (1922: 898), as *Chionaema transfasciata*.

Diagnosis: Forewing length 13-14 mm. Head, thorax and abdomen sand-yellow, with the middle section of the abdomen dorsally bone-white. Forewing in male with an elongated costal pouch running from base to two-third of the wing, where the costal rim is bent in a blunt angle. Wings of female normal shaped. Forewings bone-white, but with the wingbase and marginal field sand-yellow, in males also the costal rim sand-yellow. Males with four black transverse lines, broader than the five transverse lines in the female. The similarity with the typical patterned *Cyana* species from the Malesian region with black transverse lines is therefore obvious. Hindwings pale yellow. At the underside the pattern is obscure.

Male genitalia [gen.prep. BM-RV1528]: Uncus finger-shaped, near apex slightly curved. Tegumen broad, only slightly sclerotized. Saccus with a shallow ridge with a blunt angled rim at the inside of the vinculum bottom. Juxta well developed, "V"-shaped. Valvae rather narrow. Cucullus with distal part membranous and covered with setae. Clasper forming a narrow oval folded pocket, ending in a sharp thorn. Sacculus with a long and narrow extension with a small blunt finger-shaped apex. Aedeagus short, vesica with two lobes, distally with a group of numerous short needle-shaped cornuti, all pointing in one direction.

Female genitalia [gen.prep. BM-RV1529]: Ostium wide, rim without strong sclerotization. Antrum not sclerotized. Cervix bursae wide but rather simple, with sclerotized wrinkles, attached to it is a small globular appendix bursae. Bursa copulatrix narrow and long with in the caudal part one small irregular shaped signum, consisting of a few thorns and spines.

Distribution: Only found in Papua, Indonesia, in Nomnagihé (near Nabire) and in the Snow Moun-

tains at the Utakwa and Setekwa River.

***Cyana (Cyana) binigrofasciata* sp. nov.** (Plate 126 figs 3-4, plate 133 figs 3-4)

Holotype ♂ KSP: [INDONESIA], Irian Jaya, Sarmi, Mamberamo Tengah, Marina Valen, Gn. Acaua, 540 m, 17-20.VII.2004, H.J.M. van Mastrigt.

Paratype 1♂ RMNH: same as holotype.

Derivatio nominis: The name *binigrofasciata* refers to the only two black transverse bands on the forewing in the male.

Diagnosis: Forewings 11 mm. Head, thorax and abdomen as in the previous species. Groundcolour of forewings bone-white, very similar and obviously closely allied to *Cyana transfasciata* but smaller and in the male with only two black transverse lines and one small curved basal band which does not reach the dorsum. The sand-yellow margin does not reach the distal black transverse lines. Hindwing sand-yellow. Female unknown.

Male genitalia [gen.prep. KSP24241]: Uncus more slender and longer than in the previous species, finger-shaped and slightly bent. Tegumen broad and slightly sclerotized. Saccus not developed, vinculum bottom solid with a shallow ridge. Juxta "V"-shaped, stronger developed than in *transfasciata*. Valvae broader than in *transfasciata*, broadening towards apex. Cucullus with membranous distal part, covered with setae. Clasper forming a folded pocket, broader than in *transfasciata*, with a broad thorn. Sacculus broad, distally tapering and with a small sharp finger-shaped apex. Aedeagus broad and short, vesica with two lobes. Distally a group of numerous needle-shaped cornuti all pointing in the same direction, longer than in *transfasciata*.

Distribution: This species is until now only known from Marina Valen, in the Mamberamo River area between the Van Rees Mountains and the Foja Mountains.

Subgenus ***Clerckia* Aurivillius, 1882 stat. nov.**

Type species: *Phalaena fulvia* Linnaeus, 1758 = *Exotrocha* Meyrick, 1886 **syn. nov.**

Type species: *liboria* Stoll, 1782

= *Sphragidium* Butler, 1887 **syn. nov.**

Type species: *miles* Butler, 1887

= *Gnophrioides* Heylaerts, 1891

Type species: *flaviplaga* Heylaerts, 1891

= *Leptothrix* Heylaerts, 1892

Type species: *tettigonioides* Heylaerts, 1892 pre-occupied

Clerckia Aurivillius, 1882, with type species *fulvia* Linnaeus, 1758, may be model to the group of



dominantly orange-red coloured species from New Guinea. The type species has its distribution in the Moluccas, two species, *flaviplaga* (Heylaerts, 1891) and *tettigonioides* (Heylaerts, 1892) live much more westwards in the Sunda Region, all other 15 species occur more eastwards in New Guinea, Australia or the Solomon Islands. All species are medium sized to large Lithosiini with quite long and narrow forewings, especially in the males where the androconial pouch is rather short and positioned on the costa at two-third from wingbase. *Exotrocha* Meyrick, 1886 and *Sphragidium* Butler, 1887 are herewith considered to be synonyms of *Clerckia* Aurivillius, 1882.

Males and females of all *Clerckia* species have black bipectinate antennae with scarce, short and thin cilia. Abdomen in all species black with blue shimmering scales, in males usually with a grey anal tuft.

Male genitalia of *Clerckia* species very similar to the nominotypical subgenus but with the aedeagus vesica more complex, with usually three or more lobes with fields of scobination and short needle- or teeth-shaped cornuti.

Checklist of *Cyana* (*Clerckia*)

- flaviplaga* (Heylaerts, 1891) [Java, Bali]
tettigonioides (Heylaerts, 1892) [Sunda Region]
= *haemacta* (Snellen, 1896)
fulvia (Linnaeus, 1758)
ssp. *fulvia* (Linnaeus, 1758) [Ambon, Seram]
= *liboria* (Stoll, 1782)
= *laticincta* (Walker, 1856)
ssp. *laudans* (Hulstaert, 1923) [Kai Islands]
metamelas (Hampson, 1914) [Papua]
posthyalina **sp. nov.** [Batanta Island]
dentimarginata **sp. nov.** [Papua]
tegyra (Druce, 1899)
ssp. *tegyra* (Druce, 1899) [East New Guinea, D'Entrecasteaux Islands]
ssp. *postdivisa* (Rothschild, 1913) [New Guinea]
comb. nov.
= *tricolor* (Druce 1899) [homonym, nec sensu Swinhoe, 1892]
= *dampierensis* (Rothschild, 1916) **syn. nov.**
= *tricoloris* Strand (1922: 899) **syn. nov.**
= *acutipennella* (Röber, 1925) **syn. nov.**
ssp. *retracta* (Draudt, 1914) [New Britain]
tricolora (Butler, 1877) [Aru Islands, New Guinea]
= *tricolor* (sic) sensu (Swinhoe, 1892 nec Druce, 1899)
= *vulcanica* (Rothschild, 1916) **syn. nov.**
trigona (Rothschild, 1903) [New Guinea]
= *dinawa* (Bethune-Baker, 1904) **syn. nov.**

- simonthomasi* **sp. nov.** [Papua]
thoracica (Rothschild, Jordan, 1901) [New Guinea]
= *bicolor* (Rothschild, 1913) **syn. nov.**
= *croceizona* (Hampson, 1914) **syn. nov.**
meyricki Rothschild, Jordan, 1901 [Queensland]
flavicaput (Gaede, 1925)
ssp. *flavicaput* (Gaede, 1925) [New Britain]
= *nigromarginata* (Rothschild, 1936) **syn. nov.**
ssp. *basiflava* (Rothschild, 1936) **stat. nov.** [New Ireland]
scintillans (Rothschild, 1936) [New Ireland]
miles (Butler, 1887) [Solomon Islands]
= *cybdela* Rothschild, 1905 [Bougainville]
guizonis Jordan, 1904 [Solomon Islands]
omissa Rothschild, Jordan, 1901 [Solomon Islands]
securizonis (Butler, 1889) [Shortland Islands]
= *securinervis* (Kirby, 1892)

Descriptions of the New Guinea species

Cyana (*Clerckia*) *metamelas* (Hampson, 1914)

(Plate 126 figs 5-6, plate 133 figs 5-6)

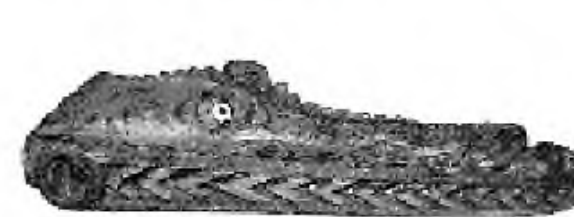
Holotype ♂ BMNH: [Dutch] New Guinea., Mimika R., vii.1910, A.F.R. Wollaston., 1911-229, *Chionaema metamelas*, type ♂. Hmps.

References: *Chionaema metamelas* Hampson, 1914. *Catalogue of the Lepidoptera Phalaenae. Supplement, volume 1. Catalogue of the Amatidae and Arctiadae (Nolinae and Lithosiinae) in the collection of the British Museum.* London, British Museum: 625; Strand (1922: 685), as *Chionaema metamelas*.

Diagnosis: Forewings male 15.5 mm. Head black with blue shimmering scales. Patagia and tegulae red. Prothorax and mesothorax dorsally red, metathorax black. Male with rather narrow forewing, costa at two-third with an elongated pouch which slightly retracts the costa. Forewings red with black costa, a broad black terminal margin, at dorsum in the tornus gradually decreasing in broadness towards base, at one-third from base only with a narrow black dorsal line. Hindwings triangular shaped, black. At the underside the red pattern on forewing more extended.

Wings of presumed female normal shaped. Forewing orange-red, towards base more orange coloured. Costa with rather broad black rim, continued along termen and in tornal area much broader, gradually narrowing till one-third towards base where the black rim ends. Hindwing yellow with a broad black terminal margin which at vein CuA1 has a blunt angle.

It is presumed that this female belongs to *metamelas* because the external features more or less



match with those from the male. It does not fit in any other known species but unfortunately it is not sure.

Male genitalia [gen.prep. NHMUK010313308]: Uncus rather short, finger shaped with a blunt apex and in the middle slightly constricted. Tegumen narrow. Valvae with a broad cucullus with broad apex rounded, at two-third somewhat constricted. Clasper on cucullus narrow triangular with a blunt apex, pressed against the cucullus surface. Sacculus narrow, extended and gradually curved upwards, apex sharp. Saccus without process. Aedeagus broad and short, vesica with at least four distinct lobes. At the base of the vesica a cornutus shaped as a rotary saw with numerous smaller teeth. A trunk-shaped ventral lobe without significant cornuti or sclerotization. A globular ventral lobe with a field of arrow-shaped cornuti and furthermore scobinated. The large central lobe ventrally with a band of small teeth, distally scobinated with tiny spikes. The dorsal lobes slightly scobinated but without distinct cornuti.

Female genitalia: Not studied because it is not sure yet that the presumed female really belongs to this species. Further research is necessary to identify the female of this species with certainty.

Distribution: So far only found in Papua, Indonesia: the male near Mimika River, the presumed female in Wangaar (near Nabire).

***Cyana (Clerckia) posthyalina* sp. nov.** (Plate 126 fig. 7, plate 133 figs 7-8)

Holotype ♂ RMNH: Indonesia, Irian Jaya, Batanta Island, south coast, 0°55'S - 130°40'E, 6-7.ii.1996, at light, ZMA-exp., 1996.

Derivatio nominis: The name *posthyalina* refers to the hyaline centre of the hindwings of the species.

Diagnosis: Forewings 14.5 mm. Head, (meso- and meta)thorax and abdomen black with a steel blue shimmer but with prothorax and base of patagia red. Anal tuft of abdomen red with a black central band. Legs black with steel blue scales. Forewing narrow and long, costa with a distinct pouch at two-third of wing length which slightly retracts the costa at this position. Forewings black with steel blue and purple shimmer. Hindwing hyaline in the centre, except for the black veins, and with a broad black dorsum and hind margin. Apex with purple shimmer. Underside identical to upperside. Female unknown. **Male genitalia** [gen.prep. RV1544]: Uncus rather short (in fig. 63 pressed down on the left side), finger shaped with a blunt apex. Tegumen

narrow. Valvae with a broad cucullus with broad apex rounded. Clasper on cucullus finger-shaped, pressed against the cucullus surface. Sacculus narrow, extended and gradually curved upwards, apex sharp and hooked. Saccus broad and shallow. Aedeagus broad and short, vesica with at least four distinct lobes, the ventral lobe being the largest, like a long tapering nightcap, which carries a broad scobinated band, ending in an impressive cornutus with five large teeth ventrally. Another cornutus situated at the base of the vesica, of about equal size of the previous described cornutus, shaped as a rotary saw with numerous smaller teeth and accompanied by a field of small teeth. Furthermore a dorsal and a lateral scobinated field, with tiny cone-shaped thorns.

Distribution: Until now only known from Batanta Island in the Raja Ampat Archipelago.

***Cyana (Clerckia) dentimarginata* sp. nov.** (Plate 126 fig. 8, plate 134 figs 1-2)

Holotype ♂ RMNH: [Dutch New Guinea], Andai, [1870], [C.B.H. von] Rosenb[erg]., Museum Leiden, *C. fulvia* L., Det., Cat.No. 6.

Derivatio nominis: The name *dentimarginata* refers to the dentation on the inside of the black margin of the hindwing.

Diagnosis: Forewings 14.5 mm. Head black, frons with slightly red near base of antennae. Patagia and tegulae red. Meso- and metathorax and abdomen black, anal tuft dark grey. Legs dark brown with at the outside pale blue scales. Forewing narrow and long, costa with a distinct pouch at two-third of wing length. Forewings red with black costa distally gradually broadening and continuing into a broad black hind margin which continues along distal half of dorsum where it is gradually narrowing and ends. The black colour with a bluish shimmer, especially at the pouch and fringes. Hindwing yellow with a broad black hind margin which is broader at the apex and at the dorsal half is dentated on the veins. Underside with the red coloration of upper-side yellow, the black pattern somewhat extended and mixed with brown. Female unknown.

Male genitalia [gen.prep. RV1549]: Uncus short and finger shaped with a blunt apex, broadly based. Tegumen gradually broadening towards uncus. Valvae with a broad cucullus which gradually tapers distally. Apex of cucullus rounded. Clasper on cucullus triangular with a finger-shaped extension and pressed against the sacculus. Sacculus narrow, extended and gradually curved upwards, apex sharp. Saccus flat, without process. Aedeagus broad and



short, vesica with at least four distinct lobes, the ventral lobe being the largest which carries a broad scobinated band, distally with a large stretched triangular cornutus with numerous large teeth. A second cornutus situated at the base of the vesica, of about equal size of the previous described cornutus, shaped as a rotary saw with numerous smaller teeth and dorsally accompanied by a field of numerous teeth. Furthermore a distal and a lateral field with tiny cone-shaped thorns, the ones in the distal field being larger than those in the lateral field.

Distribution: Until now only known from Andai in the eastern Birdshead Peninsula near the Arfak Mountains.

***Cyana (Clerckia) tegyra* (Druce, 1899)**

ssp. ***tegyra* (Druce, 1899)** (Plate 127 figs 1-2, plate 134 figs 3-4)

Holotype *tegyra* ♂ BMNH: Fergusson Island, v.1894, leg. A.S. Meek, *Exotrocha tegyra* ♂, Type Druce.

References: *Exotrocha tegyra* Druce, 1899. *Annals and Magazine of Natural History* (7) 3: 235; Hampson (1900: 316), in part; Draudt (1914: 172), as *Chionaema tricolor*; Strand (1922: 692), as *Chionaema tricolor tegyra*; Strand (1922: 899), as *Chionaema tricoloris tegyra*.

ssp. ***postdivisa* (Rothschild, 1913) comb. nov.**
(Plate 127 figs 3-4, plate 134 figs 5-6, plate 139 figs 6-7)

= *Chionaema tricoloris* Strand, 1922 **syn. nov.**
Lepidopterorum Catalogus 26: *Arctiidae: Subfam. Lithosiinae*. W. Junk, Berlin: 899.

= *Chionaema tricolor dampierensis* Rothschild, 1916 **syn. nov.** *Novitates zoologicae* 23 (3): 327; Strand (1922: 692), as *Chionaema tricolor dampierensis*.

= *Chionaema acutipennella* Röber, 1925 **syn. nov.** *Stettiner entomologische Zeitung* 85: 187.

Holotype *tricolor* Druce ♂ BMNH: Trobriand Islands, Kiriwini, v.1895, leg. A.S. Meek, *Exotrocha tricolor* ♂, Type Druce.

Holotype *postdivisa* ♀ BMNH: British New Guinea, Lower Membaré River, v.1906, leg. A.S. Meek, *Chionaema postdivisa*, Type Rothschild.

Syntypes *dampierensis* 4♂ & 4♀ BMNH: British New Guinea, Dampier Island, leg. A.S. Meek, *Chionaema tricolor dampierensis*.

Holotype *acutipennella*: "Südwest-Neuguinea", type not found.

References: *Exotrocha tricolor* Druce, 1899 homonym (nec sensu Swinhoe, 1892). *Annals*

and Magazine of Natural History (7)3: 235; Hampson (1900: 316), in part; Draudt (1914: 172); Strand (1922: 692), as *Chionaema tricolor*; Rothschild (1913: 192); Strand (1922: 688), as *Chionaema postdivisa*.

ssp. ***retracta* (Draudt, 1914)** (Plate 2 figs 13-14)

Holotype *retracta* ♂ BMNH: New Britain, 82-80, *Chionaema tricolor* ab. *retracta* Draudt, Holotype., Hampson Subsp. l.

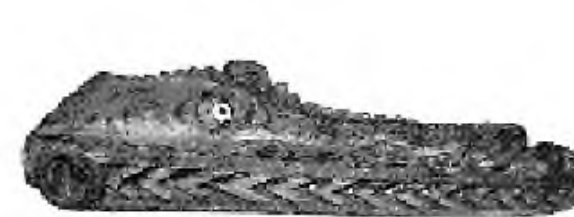
References: *Chionaema tricolor retracta* Draudt, 1914. In: Seitz A. (ed.) *Die Gross-Schmetterlinge der Erde 10: Spinner und Schwärmer des Indo-Australischen Gebiets*. Stuttgart, A. Kernen: 172; Strand (1922: 692), as *Chionaema tricolor retracta*.

Diagnosis ssp. ***tegyra***: Forewings male 15.5 mm, female 17-19 mm. Head black with steel blue shimmering scales, especially on the frons. Patagia and tegulae red, base of tegulae black with blue iridescent scales. Meso- and metathorax and abdomen black, all with blue iridescent scales, anal tuft in male dark grey. Legs dark brown, at the outside blue iridescent scales. Forewing narrow and long, costa with a distinct pouch at two-third of wing length. Forewings red with black costa, at apex continued by a black hindmargin and in tornus broadly intruding into the red field until halfway the wing length. The black colour with a blue shimmer, especially at the costa. Hindwing yellow with a broad black hindmargin which is broader at the apex, dorsum narrowly black. Underside with reduced red colour. Female as male but without the pouch at the forewing costa and much larger.

Diagnosis ssp. ***postdivisa***: Forewings male 12-15.5 mm, females 15-18.5 mm. As in ssp. *tegyra* but smaller. Patagia entirely red. Forewing with the black margin at tornus not so broadly intruding into the red field but gradually narrowing along the dorsum to halfway the wing length. Underside with reduced red colour but less strong as in *tegyra*.

Diagnosis ssp. ***retracta***: Forewings male 16 mm. Like *tegyra* s.s. but forewing with much broader black hindmargin and tornus which is intruding into the red field. Patagia entirely red. Female not studied but probably as in male.

Male genitalia [gen.prep. RV1545 (*tegyra*), RV1546 (*postdivisa*)]: Uncus long and finger shaped with a blunt apex, broadly based. Tegumen gradually broadening towards uncus. Valvae with a rather narrow cucullus, gradually tapering distally and with a rounded apex. Clasper on cucul-



lus broad, with a triangular extension and pressed against the sacculus. Sacculus narrow, extended and gradually curved upwards, apex sharp. Saccus flat, without process. Aedeagus broad and short, vesica with at least four distinct lobes, the ventral lobe with a field of tiny teeth and distally with a few larger cornuti, in *postdivisa* the field of tiny teeth on this lobe is concentrated in a band. At the base of the vesica a large bowl-shaped cornutus with numerous small teeth and dorsally accompanied by a field of numerous longitudinal teeth. Furthermore a large distal field of tiny teeth and dorsally a wide field of scattered small cone-shaped teeth.

Female genitalia [gen.prep. RV1547 (*postdivisa*)]: The core of the antrum completely sclerotized, flat, caudally with an oblique rim. Cervix bursae with the caudal part sclerotized and wrinkled. Bursa with distal part sclerotized and wrinkled, one large signum present which is a rounded patch with numerous tiny teeth. Appendix bursae large, about as large as the bursa itself, not sclerotized. Both, bursa and appendix, are broadly connected, almost forming one large bursa.

Distribution: Subspecies *tegyra* is found at the D'Entrecasteaux Islands, Goodenough Island, Fergusson Island, and smaller islands Northeast and East of New Guinea. Subspecies *retracta* is found on New Britain and New Ireland (Bismarck Archipelago). Subspecies *postdivisa* is found on the mainland of New Guinea and is very common.

Cyana (Clerckia) tricolora (Butler, 1877) (Plate 127 figs 7-8, plate 134 figs 7-8)

= *Chionaema dinava* (sic) *vulcanica* Rothschild, 1916 **syn. nov.** *Novitates zoologicae* 23 (3): 327; Strand (1922: 680), as *Chionaema dinawa vulcanica*.

Holotype *tricolora*: ♀ BMNH, Aru Isd., A.R. Wallace, 54 - 48., *D. tricolora*, Butler Type.

Holotype *vulcanica*: ♀ BMNH, Vulcan Isl., xi.1913-i.1914, (Meek's Expedition), *Chionaema dinawa vulcanica*, Type Rothschild.

References: *Dyphlaebia tricolora* Butler, 1877. *Transactions of the Entomological Society of London* 1877: 347; Swinhoe (1892: 126), as *Exotrocha tricolor* (sic) (nec Druce, 1899); Hampson (1900: 317); Draudt (1914: 172); Strand (1922: 682), as *Chionaema fulvia tricolora*.

Diagnosis: Forewings male 12.5-15.5 mm, female 16 mm. Head black with steel blue shimmering scales, especially on the frons. Patagia and tegulae orange. Meso- and metathorax and abdo-

men black, all with blue iridescent scales, anal tuft in male dark grey. Legs black with blue iridescent scales. Forewing in male narrow and long, costa with a narrow pouch at two-third of wing length. Forewings orange with narrow black costa, at apex narrowly continued by a black hindmargin (more narrow than in *tegyra*) and in tornus somewhat broader continued and gradually narrowing to half-way the wing length (more gradually than in *tegyra*). The black colour with a blue shimmer, especially at the androconial pouch. Hindwing deep yellow with a broad black hind margin which is broader at the apex, at the dorsum narrowly black. Underside with reduced yellow colour, the black border being more regular than in *tegyra*, the androconial pouch clearly visible as an isolated black patch. Female as male but without the pouch at the forewing costa and larger. The black margins of the forewing costa and termen broader. In the tornus the black margin like in male gradually narrowing towards halfway forewing length (in *tegyra* less gradually).

Male genitalia [gen.prep. RV1559]: Uncus rather long, broader than in *tegyra*, finger shaped with a blunt apex. Tegumen broad. Valvae robust, with a broad cucullus, gradually tapering distally and with a truncated apex. Clasper on cucullus broad, triangular with a thorn-shaped extension, pressed against the sacculus. Sacculus broader than in *tegyra*, extended and almost straight, apex with a sharp curved thorn. Saccus flat, without process. Aedeagus broad and short, vesica with at least four distinct lobes, the ventral lobe with a band of tiny teeth and with cornuti distally gradually getting larger to some massive hooked thorns. At the base of the vesica a large bowl-shaped cornutus with numerous small teeth and dorsally accompanied by a band of large teeth. Furthermore a large distal field of tiny teeth and dorsally a wide field of scattered tiny cone-shaped teeth. Female genitalia not examined.

Distribution: The holotype of *tricolora* was found on the Aru Islands (Indonesia), the holotype of *vulcanica* was found on Vulcan Island (Manam, Papua New Guinea). Both are females and actually the only females known. The presumed males of this species (assumed by the matching pattern of the forewing tornus) have been found on the mainland of New Guinea but are quite rare.

Cyana (Clerckia) trigona Rothschild, 1903 (Plate 128 figs 1-2, plate 135 figs 1-2, plate 140 figs 1-2)

= *Chionaema dinawa* Bethune-Baker, 1904 **syn. nov.** *Novitates zoologicae* 11 (2): 423; Draudt



(1914: 172); Strand (1922: 682), as *Chionaema dinawa*

Lectotype *trigona* [designated from syntype series of 2♂] ♂ BMNH: British New Guinea, Aroa R., (Weiske.), *Clerckia liboria trigona*, Type 1903, Nov.Zool. R. & J.

Lectotype *dinawa* [designated from syntype series of 2♂] ♂ BMNH: British New Guinea, Dinawa, 4,000 ft., viii.1902, Coll. A.E. Pratt, *Chionaema dinawa*, Type B-B.

References: *Clerckia fulvia trigona* Rothschild, 1903. *Novitates zoologicae* 10 (2): 312; Draudt (1914: 172); Rothschild (1915: 47); Strand (1922: 682), as *Chionaema fulvia trigona*.

Diagnosis: Forewings male 13.5-14.5 mm, female 15.5 mm. Head black with on the frons blue shimmering scales. Patagia and tegulae brown-red. Meso- and metathorax brown-red except for the distal part of the metathorax which is black with blue metallic scales. Abdomen black with blue iridescent scales, anal tuft in male dark grey. Legs black with blue iridescent scales. Forewing in male narrow and long, costa in male dorsally with a narrow pouch at two-third of wing length. Forewings brown-red with narrow black costa, at apex continued by a narrow black hindmargin and in tornus hardly broader than in hindmargin, gradually narrowing and running as a thin line along the entire dorsum to wingbase. The black colour with a slightly blue shimmer. Hindwing deep yellow with a broad black hind margin which is broader at the apex, at the dorsum broadly black and with a black streak in the basal area. Underside forewing with reduced yellow colour, in females less reduced. Female as male but without the pouch at the forewing costa and larger.

Male genitalia [gen.prep. RV1557]: Uncus long, finger shaped with a rounded apex. Tegumen broad. Valvae with a broad cucullus, gradually tapering distally and with a rounded apex. Clasper on cucullus triangular with a small blunt extension, pressed against the sacculus. Sacculus rather narrow, extended and curved with a sharp apex. Saccus flat, without process. Aedeagus broad and short, vesica with at least four distinct lobes, the long ventral lobe without cornuti. At the base of the vesica a bowl-shaped cornutus with numerous small teeth. A large lateral and distal field of tiny cone-shaped teeth, distally with larger cornuti which ends in a massive cornutus with some large teeth. Dorsally a field of clustered tiny teeth.

Female genitalia [gen.prep. RV1558]: The antrum sclerotized, flat, only the edges unsclerotized. caudally oblique. Cervix bursae with the caudal

half sclerotized and wrinkled. Bursa with one large signum which is more or less rectangular with numerous tiny teeth. Appendix bursae large, about as large as the bursa itself, not sclerotized. Both, bursa and appendix, are broadly connected, almost forming one large bursa but divided by a sclerotized band.

Distribution: The species is widely distributed on New Guinea and prefers mountainous areas (750-1970 m). Locally a common species.

***Cyana (Clerckia) simonthomasi* sp. nov.** (Plate 128 figs 3-4, plate 135 figs 3-4)

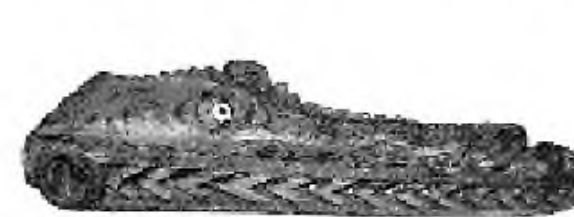
Holotype ♂ RMNH: Ned. Nieuw Guinea, Kota Nica, Res. Hollandia, xi.1961, 100 m, host: Myrist., ex larva, leg. R.T. Simon Thomas.

Paratypes 3♂ RMNH: Ned. Nieuw Guinea, Achterland Hollandia, 20.x.1936, leg. W. Stüber, coll. J.M.A. van Groenendael; 1 ♀ RMNH, [Dutch New Guinea, nr Hollandia, ca. 1961], Ganjam kw[EEK], ex larva, leg. R.T. Simon Thomas.

Derivatio nominis: The species is named in honour of Dr. Robert Terko Simon Thomas, former biological researcher in Hollandia (Dutch New Guinea) who bred the species in New Guinea without knowing that it concerned a new species. Before he died, on 5th June 2013, he was notified that this species would be named after him.

Diagnosis: Forewings male 12.5-13 mm, female 17 mm. Head and antennae brown, frons with greyish pale blue scales between the antennae. Patagia and tegulae orange-red. Meso- and metathorax black but mesothorax with a red distal rim. Abdomen black, anal tuft dark grey. Legs dark brown with at the outside grey-blue scales. Forewing narrow and long, costa with a distinct pouch at two-third of wing length. Forewings orange-red at costal half, gradually fading into orange towards dorsum. Costa narrowly black, continued at termen with a narrow black hindmargin, in tornus slightly broader and along dorsum towards base gradually narrowing until halfway winglength. In contrary of the previous species the black colour without bluish shimmer. Hindwing yellow with a broad black hind margin which is broader at the apex, unique for this species is that the margin is fading in the tornus, leaving the dorsum yellow. Underside with the red coloration of upperside yellow and reduced. Female similar to male but larger and without the costal pouch.

Male genitalia [gen.prep. RV1550]: Uncus short with a spoon-shaped apex, broadly based. Tegumen gradually broadening towards uncus. Valvae with a broad cucullus which gradually tapers dis-



tally. Apex of cucullus rounded. Clasper on cucullus broad triangular with proximally a finger-shaped thorn, pressed against the sacculus. Sacculus rather broad, extended and distally curved upwards, apex with a sharp thorn. Saccus flat, without process. Aedeagus broad and short, vesica with at least four distinct lobes, the ventral lobe being the largest which carries a scobinated band with only few tiny chitinous drops, distally with larger cornuti with some very large clustered thorns. At the base of the vesica a stretched bowl-shaped cornutus with numerous smaller teeth and accompanied by a field of larger teeth. In the other two lobes a field of cone-shaped thorns, the ones in the distal field somewhat clustered. Female genitalia not studied because of missing of the abdomen in the only female specimen.

Additional information: The species has been reared by Dr. R.T. Simon Thomas for study at his laboratory in Hollandia, Dutch New Guinea. The foodplants were *Myristica* species, nutmeg. The cocoons which were spun by the caterpillars are of the typical *Cyana* type, with wide meshes of black and grey threads. The pupa is grey-brown with black stigmata.

Distribution: All specimens have been found in or nearby Hollandia (now Jayapura) in the north-east of Papua, Indonesia.

***Cyana (Clerckia) thoracica* Rothschild, Jordan, 1901** (Plate 128 figs 5-8, plate 129 figs 1-2, plate 135 figs 5-6, plate 140 figs 3-4)

= *Chionaema bicolor* Rothschild, 1913 **syn. nov.** *Novitates zoologicae* 20 (1): 192; Draudt (1914: 172); Hampson (1914: 635); Strand (1922: 678), as *Chionaema bicolor*.

= *Chionaema croceizona* Hampson, 1914 **syn. nov.** *Catalogue of the Lepidoptera Phalaenae. Supplement, volume 1. Catalogue of the Amatidae and Arctiidae (Nolinae and Lithosiinae) in the collection of the British Museum*. London, British Museum: 626; Strand (1922: 679), as *Chionaema croceizona*.

Lectotype *thoracica* [designated from syntype series of 4♂] ♂ BMNH: [Dutch New Guinea], Humboldt Bay, ix-x.1892., W. Doherty, *Clerckia thoracica*, Type! 1901.

Holotype *bicolor* ♂ BMNH: German New Guinea, *Chionaema bicolor*, Type Rothschild.

Holotype *croceizona* ♀ BMNH: [Dutch] New Guinea, Wataikwa River, A.F.R. Wollaston., 1911-229., x.1910, *Chionaema croceizona*, type ♀. Hampson.

References: *Clerckia thoracica* Rothschild, Jordan, 1901. *Novitates zoologicae* 8 (4): 410; Roths-

child & Jordan (1903: 482), as *Clerckia thoracica*; Draudt (1914: 172); Strand (1922: 692); Hampson (1914: 624); Gaede (1925: 243), as *Chionaema thoracica*.

Diagnosis: Forewings male 14-17 mm, female 20 mm. Head black with on the frons blue shimmering scales. Patagia black, in some specimens with an orange base. Tegulae orange, in some specimens with a black base. Pro- and mesothorax orange, metathorax black with blue hair-scales. Abdomen black with, anal segment orange-yellow. Legs dark grey-brown with blue shimmer.

The species is strongly sexual dimorphic in wing pattern which for a long time caused that both were considered to be different species. Previously no females were known from *thoracica* and no males were known from *croceizona*, until they were matched here. Forewing in male narrow and long, costa in male dorsally with a narrow pouch at two-third of wing length but this pouch is much less developed compared to other *Clerckia* species. Forewings yellow with the distal third orange-red. The black pattern on the forewing and hindwing is rather variable, in some specimens more extended or reduced than in others. Costa black, broadly continued along termen and ending in tornus. At apex the orange-red zone shortly intruded with black. Hindwing yellow with a broad black hind margin which is broader at the apex, at the dorsum broadly black but with yellow fringes at dorsum. Underside forewing at apex with extended black margin, hindwing identical to upperside. Female with broad forewing and with arched costa. Wing pattern of forewing usually black with an orange-yellow transverse band running from $\frac{3}{4}$ forewing length at costa to dorsum just next to the tornus. The black colour with a purplish shimmer. In one specimen from Landikma (Jayawijaya Mountains) in the basal half of the forewing also orange-yellow, except for the black costa basally (fig. 24), which most likely concerns a variation, the genitalia of this form are identical to those from the typical form. Hindwings black with a broad orange-yellow curved band which follows the narrow black hindmargin. The black colour with purplish shimmer, fringes with blue iridescence. Underside of both forms identical, similar to the upperside of the typical form but with broader orange band.

Male genitalia [gen.prep. RV1555]: Uncus finger shaped with a straight truncated apex. Tegumen broad. Valvae with a broad cucullus, gradually tapering distally and with a rounded apex. Clasper on cucullus with a ridge running from costa towards sacculus, arched and with setae on the rim, and



folded inwards. Sacculus broadly based, extended and curved with a sharp apex. Saccus "V"-shaped, with a shallow process. Aedeagus broad and short, slightly curved. Vesica with six lobes, the long and broad ventral lobe with a narrow scobinated band. At the base of the vesica a small bowl-shaped cornutus with numerous small teeth and a sclerotized ridge running distally. A broad scobinated band running from base of vesica running ventro-distally, ending in a cluster of needle-shaped cornuti. Dorsally from this cluster a larger bunch of needle-shaped cornuti and at the dorsal lobe a third but less dense cluster of needle-shaped cornuti.

Female genitalia [gen.prep. RV1548, RV1556]: The antrum sclerotized and flat. Cervix bursae unsclerotized and modestly sized. Bursa at the top with a strongly sclerotized folded plate. Half of the bursa copulatrix weakly sclerotized with strong wrinkles. Appendix bursae as a broad trunk-shaped extension latero-distally of the bursa. Two signa present, one smaller bowl-shaped signum with tiny teeth caudally and a longer boat-shaped signum, with even smaller teeth, laterally.

Distribution: It is a rather common species on New Guinea which prefers lowland and moderate altitudes. Most abundant in the western (Indonesian) part of New Guinea.

Subgenus *Cryptanaema* subgen. nov.

Type species: *Chionaema nigroplagata* Bethune-Baker, 1910

Cryptanaema subgen. nov. consists of species with a more complex or cryptic wing pattern which is dominantly with white, grey, black or brown patches, irregular lines or bands. The wings are relatively short and broad with in the males a distinct androconial pouch which either can run from wing base to $\frac{3}{4}$ of wing length or is positioned at two third from base of the costal rim. The subgenus occurs almost exclusively in New Guinea, one species in Australia. The structure of the male and female genitalia divide the species at least into four groups.

The *nigroplagata* group is the largest with until now seven recognized species. The wings are characterized by a complex of black or brown patches or bands on a white or cream coloured ground. Strong sexual dimorphism. The male genitalia are characterized with valvae which have the major part of the sacculus sclerotized with complex folds and rims. At the apex of the sacculus is a short finger-shaped process which form and size is diagnostic for the species. The aedeagus is short, the vesica with a long blade-shaped cornutus and two fields

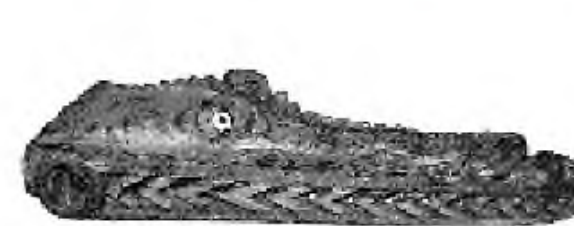
with thorn-shaped cornuti. The female genitalia are characterized by a large bursa copulatrix, the cervix bursae more or less broadly sclerotized with wrinkles and folds, and caudally with a characteristic large and clearly defined appendix bursae. Only one signum present with spines or thorns.

A closely allied group of species is the *fumea* group with three species. The wings are rather uniformly brown coloured with minor conspicuous pattern of dark patches or lines. Sexual dimorphism is less pronounced. The male genitalia have the valvae long and narrow with a narrow sclerotized sacculus which is extended with a long sharp process, the cucullus is for the major part unsclerotized. Aedeagus short and vesica with a blade-shaped cornutus and two fields of cornuti of which one field has only tiny spines or thorns, much smaller than in the *nigroplagata* group. The female genitalia with the bursa copulatrix globular, the distal part more regularly sclerotized (no wrinkles) and with a small and clearly divided appendix bursae or none. One signum with tiny thorns.

The *punctistrigosa* group consists until now of two species. The wing pattern is very diverse, cryptic like in the *nigroplagata* group. Strong sexual dimorphism. The valvae in the male genitalia are quite different from those in the previous two groups, the broad cucullus slightly sclerotized, with the sharp apex bent outwards. The vesica of the short aedeagus with a blade-shaped cornutus and one conspicuous field of large thorn-shaped cornuti. The female genitalia with a large bursa copulatrix, distally sclerotized and caudally with or without an inconspicuous appendix bursae. One small signum with tiny thorns.

The *brunnea* group is represented by only one species, in fact it is unclear if *Cyana brunnea* really belongs to the genus *Cyana*. The characteristic androconial pouch at the costa is what keeps this species in the genus. The wing colour and pattern is like that of the *fumea* group, rather uniformly dark brown with a yellowish white post medial transverse line. The male valvae are of a different structure than in the other groups, sacculus short and only slightly sclerotized, the clasper being the only conspicuous ornament. The cucullus is long and narrow, partly sclerotized with long setae at the costa. The vesica of the short aedeagus with one field of thorn-like cornuti. The female genitalia with a large globular bursa copulatrix and only sclerotized at the ostium and antrum. Caudally with a clearly separate appendix bursae. One signum with small thorns.

Cyana (Cryptanaema) obscura Hampson, 1900 is the only species of this group that occurs out-



side New Guinea, but its habitat Queensland has proven to have more sympatric distribution patterns with New Guinea. During the last Ice Ages the Torres Strait, which divides New Guinea from North Queensland, was dry and an opportunity for animals to migrate over land and to colonize new areas on both sides.

Checklist of *Cyana* (*Cryptanaema*)

nigroplagata group

nigroplagata (Bethune-Baker, 1910)

= *Scaptosyle aroa* Bethune-Baker, 1904 **homonym**

nov. (nec *Chionaema aroa* Bethune-Baker, 1904)

albimarginalis **sp. nov.**

basialba (Rothschild, 1913)

molbakon **sp. nov.**

inuitata (Bethune-Baker, 1910)

zwieri **sp. nov.**

melanoplagia (Hampson, 1900)

ssp. *melanoplagia* (Hampson, 1900)

ssp. *orcheia* (Rothschild, 1916)

ssp. *extrema* **ssp. nov.**

obscura (Hampson, 1900) [Queensland, Australia]

fumea group

aroa (Bethune-Baker, 1904) (nec *Scaptosyle aroa* Bethune-Baker, 1904)

charybdis (Bethune-Baker, 1904)

= *nigrescens* (Rothschild, 1913) **syn. nov.**

fumea (Hampson, 1900)

= *melanochlorus* (Rothschild, 1916) **syn. nov.**

punctistrigosa group

punctistrigosa (Rothschild, 1913)

gracilis **sp. nov.**

brunnea group

brunnea (Bethune-Baker, 1904)

Descriptions of the New Guinea species

***Cyana* (*Cryptanaema*) *nigroplagata* (Bethune-Baker, 1910)** (Plate 129 figs 3-4, plate 135 figs 7-8, plate 140 figs 5-7)

= *Scaptosyle aroa* Bethune-Baker, 1904 **homonym nov.** (nec *Chionaema aroa* Bethune-Baker, 1904: 423) *Novitates zoologicae* 11 (2): 422; Draudt (1914: 181), as *Scaptosyle aroa*; Hampson (1914: 612), as *Caprimima aroa*; Strand (1922: 667), as *Damias aroa*.

Holotype *Scaptosyle aroa* ♀ BMNH: British New Guinea, Upper Aroa River, iii.1903, (Meek), *Scaptosyle aroa*, type.

Holotype *nigroplagata* ♂ BMNH: British Central New Guinea, Mount Kebea, 6,000 ft., iii-iv.1903, A.E. Pratt Coll., *Chionaema nigroplagata*, Type B-B.

References: *Chionaema nigroplagata* Bethune-Baker, 1910. *Annals and Magazine of Natural History* (8) 6: 442; Hampson (1914: 628); Strand (1922: 686), as *Chionaema nigroplagata*.

Diagnosis: Forewings male 12-13 mm, female 13-16.5 mm. Male with antennae brown, bipectinate. Head white, patagia bone-white but with lateral half brown with a purplish shimmer, like the base of the bone-white tegulae. Thorax white, in some specimens with a small black dorsal spot on the prothorax. Abdomen bone-white. Legs dark purplish-brown with bone-white rings. Forewing in male short and rather narrow, costa in male dorsally with a longitude narrow pouch running from base to $\frac{3}{4}$ of the winglength from where the costa is shallow angled and ends with a square angled apex. Forewings with the pouch purplish-brown crossed by three white bars which divide the costa in fact in four equal parts. Center of the forewing white, distally and along the pouch bone-white. A conspicuous black, more or less square patch in the post-median field with at the innerside three white dots in a row. In the median field a complex black marbled pattern. A row of marginal dots which run from the middle of the termen towards apex in increasing size. Hindwings white, in the basal area with bone-white hairs along the veins. Underside almost unicolorous white, except for the forewing costa with the pouch patterned black and white and with the pattern of the upperside shining through. Female with antennae dark brown, thinner than in male. Head white, patagia brown with strong purplish shimmer. Tegulae white with a purplish-brown base. Thorax and abdomen bone-white. Legs bone-white with brown rings. Forewing in female of a usual form, rather broad. Forewings purplish-black with white dots and patches: at the base one small dot, in the basal field two larger patches, one sub-basal patch at the dorsum, three patches in a row in the median field of which the dorsal two are usually confluent and near the costa on both sides accompanied by two spots (the basal two being the smallest), a row of small post-median spots and finally two large longitudinal marginal patches. Fringes white. Hindwings white with a broad dark grey margin, with white tipped apex, fringes white. Underside with the dark pattern fainted.

Male genitalia [gen.prep. RV1530]: Uncus long and finger shaped, hooked with a sharp apex. Tegumen broad and parallel sided. Valvae with cucul-



lus basally sclerotized, apical third only slightly sclerotized with rounded apex and with a comb of inwards curved strong setae. Clasper on cucullus rather complex with ridges, plates and folds: a distal ridge running obliquely from costa to the base of the apex of the saccular extension, a stronger sclerotized plate along the basal rim of the sacculus which is continued by an even stronger sclerotized spearhead-shaped plate which overlaps the base of the saccular extension. Sacculus large and broad, in the middle of the valvae gradually tapering in a short but solid extension with a sharp hooked apex. Saccus flat, without a process. Juxta rather simple, conversed "V"-shaped. Aedeagus broad and short, distally slightly tapering. Vesica globular, from base of vesica a long sclerotized narrow ridge running distally. Dorsally with a dense field of thorn-shaped cornuti and more ventrally with a larger field of more spread and larger thorn-shaped cornuti.

Female genitalia [gen.prep. RV1531]: Ostium rim, antrum and ductus bursae unsclerotized. Cervix bursae with a sclerotized folded and wrinkled plate which continues caudally with decreasing sclerotization. Bursa unsclerotized and characteristically triangle shaped. Caudally with a smaller globular appendix bursae. One small signum present: an irregular dentate plate with some tiny teeth on the surface.

Taxonomical note: The species is strongly sexual dimorphic in wing pattern which caused that both were at first considered to be different species. The male was described as *Chionaema nigroplagata* Bethune-Baker, 1910, the female as *Scaptosyle aroa* Bethune-Baker, 1904. In the same publication Bethune-Baker (1904) made the unfortunate decision to describe another species as *Chionaema aroa* which at that time was not yet a problem. However, *Scaptosyle aroa* (page 422) and *Chionaema aroa* (page 423) are in fact homonyms because they now appear to belong to the same genus, *Cyana*, in which the first mentioned would have page priority above the second. However, because of this confusion of equal names and the fact that there is no valid name for *Chionaema aroa* available, it seems wise to consider the name of the male, *nigroplagata* Bethune-Baker, 1910 to be the valid name of the species. *Chionaema aroa* Bethune-Baker, 1904 (page 423) is a different *Cyana* species and will stay valid, *Scaptosyle aroa* Bethune-Baker, 1904 (page 422), based on the female sex of *Chionaema nigroplagata*, enters therefore into secondary homonymy with *Chionaema aroa* and will be downgraded in favor of *Chionaema nigroplagata*.

Distribution: It is a very common species on the island of New Guinea which prefers mountain areas but is also found in the lowland.

***Cyana (Cryptanaema) albimarginalis* sp. nov.**

(Plate 129 fig. 5, plate 136 figs 1-2)

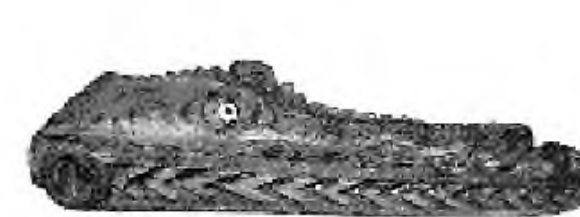
Holotype ♂ KSP: Indonesia, Papua, Puncak Jaya, Mokndoma, E 137°46.500' S 3°38.649', 2180 m, 15-23.i.2013, leg. Wild fam. & H. van Mastrigt, KSP65627.

Paratype 1 ♂ KSP: same as holotype.

Derivatio nominis: The name of the species refers to the broad white margin on the forewings.

Diagnosis: Forewings male 11 mm. Antennae brown, labial palpal black. Head, patagia, tegulae and thorax snowy white, patagia at base with a black spot. Legs pale yellow with black rings on the tarsi. Abdomen with basal half snowy white, distal half pale yellow with white anal tuft. Forewing rather short, costa in male dorsally with a longitude narrow pouch running from base to the subapical area. Pouch black and crossed by two white bars which divides the pouch in three equal parts. Major part of the forewing snowy white, including the broad hindmargin. A dark brown post-median band runs from costal pouch to dorsum and with a row of small white spots along the innerside which is indented in the wing fold. In the median field a thin black marbled pattern. A brown hairy scaling along the rim of the pouch. Hindwings snowy white, including the fringes. Underside with less pronounced black and brown pattern, the post-median band towards dorsum tapering. At the costa of the hindwing at the underside with a greyish-brown patch. Female unknown.

Male genitalia [gen.prep. KSP65627]: Uncus long and finger shaped, apex rather blunt. Tegumen broad, broader towards uncus. Valvae rather narrow, cucullus narrow and basally sclerotized, apical third only slightly sclerotized with rounded apex and with a comb of inwards curved small setae. Clasper pistol-shaped, strongly sclerotized, based on a distal oblique ridge which runs from costa to the end of the extension of the sacculus. A triangular folded sclerotized plate at the inside at the middle of the sacculus. Sacculus long, rather narrow and almost parallel sided, distally tapering towards a short solid extension with a blunt apex. Saccus arched, without a process. Juxta rather simple, conversed "V"-shaped. Aedeagus broad and short. Vesica globular with some small lobes. From base of vesica a long sclerotized ridge running distally, with both ends broader than in the middle. Dorsally with a small field of 7 rather large and 3 smaller thorn-shaped



cornuti and ventro-distally with two fields of cornuti: one with larger cone-shaped cornuti and one with very small chitinous drops.

Distribution: The only two specimens known have been found at about 2200 meters in the Sudirman Mountains (former Snow Mountains), Papua, Indonesia.

Cyana (*Cryptanaema*) *basialba* (Rothschild, 1913) (Plate 129 figs 6-7, plate 136 figs 3-4, plate 140 figs 8-9)

Holotype ♀ BMNH: British New Guinea, Biagi, Mambare R., 5000 ft., ii.1906, (A.S. Meek), *Chionaema basialba*, Type Rothschild.

References: *Chionaema basialba* Rothschild, 1913. *Novitates zoologicae* 20 (1): 192; Draudt (1914: 173); Hampson (1914: 629); Strand (1922: 677), as *Chionaema basialba*.

Diagnosis: Forewings male 11.5 mm, female 12 mm. Male with antennae, head, patagia and tegulae, grey-brown. Thorax grey-white. Abdomen basally half snowy white, distal half bone-white. Legs grey with black rings on the tarsi. Forewing rather narrow, costa in male dorsally with a longitude narrow pouch running from base to the subapical area. Pouch dark grey with a narrow dark brown subbasal band running from costa to dorsum and a post-median brown-yellow band running from costa through the cell to the cubital vein. Major colour of the forewing brown, somewhat faintly marbled with white, the basal half of the dorsum white, in the middle at dorsum with a brown band crossing the white. In the apex a large conspicuous pale grey-brown patch and a smaller one in the tornus. Hindwings bone-white, including the fringes, at the apex and costa grey.

Female antennae, head, patagia and tegulae chocolate brown, the apex of the tegulae with white hairy scales. Thorax snowy white, in some specimens with a brown spot dorsally on metathorax. Abdomen grey, basally with some paler scales. Legs grey. Forewings broader than in male, chocolate brown. Basally with a large snowy white patch but the very wing base brown. A round snowy white apical patch and a longitudinal tornal patch, leaving the fringes brown. A snowy white costal patch in the middle and a white post-median spot which is a part of a usually faint or absent irregular post-median line. The brown colour in some specimens slightly marbled with white, especially at the dorsum. Hindwings unicolorous grey, somewhat paler at very wing base. Underside grey, forewing with a faint white apical patch and dorsum white.

Male genitalia [gen.prep. KSP24243]: Uncus long and finger shaped, apex rather blunt. Tegumen broad, almost parallel sided. Valvae rather broad, cucullus narrowly based and broadening distally. Basally sclerotized, apical third only slightly sclerotized with rounded apex and with one larger seta. Clasper long claw-shaped, strongly sclerotized, broadly based on a distal oblique ridge which runs from costa to the end of the extension of the sacculus. Sacculus broad with a triangular basal plate which overlaps the base of the cucullus. A short solid and hooked extension distally of the sacculus with a blunt apex. Saccus arched, without a process. Juxta rather simple, conversed “V”-shaped with a broad rim. Aedeagus broad and short, distal half narrowing. Vesica globular. From base of vesica a long sclerotized curved ridge running distally. Dorsally with a small field of 6 rather large and 2 smaller thorn-shaped cornuti and ventrally with two fields of cornuti: one with larger cone-shaped cornuti and one with very small chitinous drops.

Female genitalia [gen.prep. RV1534, KSP24244]: Ostium rim and antrum very slightly sclerotized, antrum flat and caudally oblique. Bursa copulatrix globular, cervix bursae with a band of sclerotized folded ribs connected to the bursa. Caudally with a rather large oval appendix bursae. One characteristically formed signum present in the caudal area, signum constricted at one side in the middle and covered with large thorns along the edges.

Distribution: The species is found in New Guinea at altitudes from 500 – 1850 meters. It is not very common.

***Cyana (Cryptanaema) molbakon* sp. nov.** (Plate 129 fig. 8, plate 141 figs 1-2)

Holotype ♀ RMNH: Ned. Nieuw Guinea, Sterrengebergte, Molbakon, 2-11.ix.1959, Sterrengebergte Exp.

Derivatio nominis: The species name “molbakon” refers to the village in the Star Mountains where the holotype was found.

Diagnosis: Forewings female 12 mm. Female with head, labial palpa, antennae, patagia, tegulae and thorax brown. Abdomen grey-brown. Legs yellow-brown with dark brown rings on the tarsi. Forewing dark brown with bluish pale grey pattern: a narrow basal line, a broad and oblique subbasal band running from dorsum to the cell, a conspicuous median fascia with a sharp angle in the cell and with a small dark brown discal spot, a narrow undulate submarginal line which follows the distal edge of the median band and finally a bluish pale



grey margin which is indented by small triangular teeth at the fringe line. Fringes grey-brown. Hindwing basally whitish but the distal half and costal area gradually suffused grey-brown. Fringes of hindwing pale grey. Underside forewing unicolorous brown except for the costal rim which is darker brown with two white spots. Underside hindwing as upperside. Male unknown.

Female genitalia [gen.prep. RV1567]: Ostium rim and antrum not sclerotized. Bursa copulatrix globular but wider than long, cervix bursae with a plate of about seven sclerotized ribs. At the right side caudally with a rather large globular appendix bursae. One characteristically formed signum present in the caudal area, like in *basialba* signum constricted at one side in the middle and covered with coarse thorns, especially along the edges, the signum more compact than in *basialba* of which the signum is wider.

Distribution: The species is only known by the female holotype and was found in the Star Mountains.

***Cyana (Cryptanaema) inusitata* (Bethune-Baker, 1910)** (Plate 130 figs 1-3, plate 136 figs 5-6, plate 141 figs 3-5)

Lectotype [designated from syntype series of 1♂ and 1♀] ♂ BMNH: Arfak Mountains, North New Guinea, 4,000 ft. li-iii. 1909, C.B. Pratt., *Chionaema inusitata*, Type ♂ B-B.

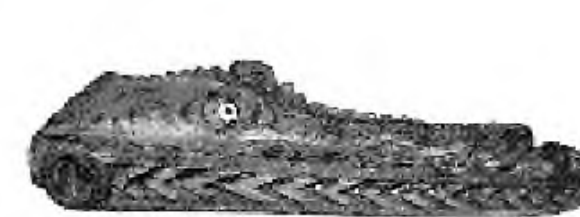
References: *Chionaema inusitata* Bethune-Baker, 1910. *Annals and Magazine of Natural History* (8) 6: 442; Hampson (1914: 628); Strand (1922: 684), as *Chionaema inusitata*.

Diagnosis: Forewings male 15 mm, female 13.5-15.5 mm. Male with antennae brown, palpal black, head yellow to bone-white, patagia pale yellow with a broad black rim with purplish shimmer, tegulae pale yellow with a large black patch with a blue shimmer. Thorax pale yellow with a large black dorsal patch. Abdomen basally with pale yellow hairy scales, distally abdomen grey, anal tuft yellow. Legs yellow with black bands and rings on the tibiae and tarsi with purplish shimmer. Costa of forewing in male strongly arched in the subapical area. A rather broad longitudinal pouch along the costa. Termen rounded. Pouch with three alternate bone-white and black bands of which the central black band is the broadest, the black colour with purplish shimmer. Pouch distally extended with a strongly scaled flap. Major colour of the forewing bone-white. Pattern brown with a copper glow: at dorsum a median irregular patch and an irregular edged submar-

ginal band which is broadest in the middle and a row of black terminal dots, fringes grey. Hindwings bone-white with the base pale yellow. A broad grey marginal band, including the fringes. Underside of fore- and hindwings in male almost identical to upperside but with the dark pattern somewhat reduced and less pronounced.

Female antennae and palpal black, head yellow, patagia entirely black with strong purplish shimmer, tegulae with basal half black with purplish shimmer, distal half yellow. Thorax yellow with a large black dorsal patch with a blue glow. Abdomen basally with yellow hairy scales, distally abdomen grey, the inter-segmental rims and distal segment yellow. Legs yellow with bands and rings of black and blue shimmer on the tibiae and tarsi. Forewings rather long but robust. Main colour of forewing in female is brown to very dark brown with a copper glow. Specimens can be quite variable in pattern, in some specimens only a basal white patch and a small longitudinal apical dot is present, but usually the dark forewings have a large white basal patch, leaving the very wing base brown, a slightly oblique white median band of three more or less confluent patches which runs from costa to dorsum. In this band a small black discal spot is present or confluent with the outer edge of the band. Usually one or a few small white subbasal spots and a faintly visible irregular post-median line, but in dark specimens these are absent. A longitudinal apical spot which is almost always present, even in dark specimens. In the tornal area in pale patterned specimens some white marbling present. Fringes black. Dark specimens can always be identified by the strong copper glow of the forewings and the characteristic yellow head. Hindwings unicolorous grey but paler at the very wing base. Underside with strong reduced white pattern but the apical spot always clearly visible.

Male genitalia [gen.prep. RV1538]: Uncus long, slender and hooked with a sharp apex. Tegumen broad, parallel sided. Valvae broad, cucullus in the center not sclerotized, apical third hardly sclerotized with a slightly falcate apex and with a row of strong setae on the apical rim. Clasper large, triangular and flat with a sharp thorned apex and pressed against the sacculus extension. Sacculus strong and broad with a finger-shaped process in the middle which overlaps the unsclerotized center of the cucullus. A solid extension distally of the sacculus with a sharp hooked thorn at the apex. Saccus flat, without a process. Juxta conversed "V"-shaped with a narrow sclerotized rim. Aedeagus broad and very short, distally broadly incised. Vesica globular with



two distinct lobes. The dorsal lobe scobinated with very tiny chitinous drops which continues distally and runs in a band to the ventral lobe. In this large ventral lobe some characteristic cornuti are found: one large bar-shaped cornutus with both ends opposite hooked. Distally a field of large thorn-shaped cornuti which are getting smaller ventrally, and laterally a field of even larger thorn-shaped cornuti with some smaller thorns aside.

Female genitalia [gen.prep. RV1535, RV1539, RV1540, RV1541]: Ostium rim and antrum not sclerotized and with a rather long ductus bursae. Bursa copulatrix more or less triangular, cervix bursae with a plate of strongly sclerotized wrinkled folds. Caudally with a rather large globular appendix bursae. One small bowl-shaped signum present in the caudal area, heavily thorned at the edges and with some dentated projections.

Distribution: Widely distributed in Indonesian New Guinea and Waigeo Island, in Papua New Guinea it seems restricted to the western area near the border. Locally a common species. Found in lowland and mountain areas.

***Cyana (Cryptanaema) zwieri* sp. nov.** (Plate 130 figs 4-6, plate 136 figs 7-8, plate 141 figs 6-8)

Holotype ♂ RMNH: Indonesia, Papua, Kecamatan Nipsan, Walmak, 1710 m, 4°07'S - 138°36'E, 31.i-09.ii.2005, at light, cultivated area, UNCEN-ZMA Expedition, Papua Indonesia 2005.

Paratypes 2♂ & 4♀ RMNH: same as holotype.

Derivatio nominis: The species is named in honour of J.H.H. Zwier (Zelhem, The Netherlands) who was a member of the 2005 expedition to Walmak where the types of this species were collected.

Diagnosis: Forewings male 12-13 mm, female 13-15 mm. Males with antennae brown, labial palpal dark brown. Head dark brown with a purplish gloss. Patagia and tegulae usually dark brown with a purplish gloss but in pale specimens bone-white with some diffuse shining brown-purple scaling. Thorax bone-white with scarce brown scales. Legs buff coloured without pattern. Abdomen bone-white, basally with buff coloured hairy scales, anal tuft buff. Forewing short and broad, at $\frac{3}{4}$ of wing length the costa is noded by the distal flap of the narrow rectangular pouch. Pouch dark brown, marbled with some white and with the distal flap buff coloured. A dark brown-purplish hairy scaling along the rim of the pouch. Dorsum of forewing bone-white, in the middle with some black marble pattern, the area between dorsum and costa reddish brown, in pale specimens only traces of this. An irregular and in-

complete subbasal line running from dorsum to the cubital vein, at dorsum pronounced. A broad dark brown undulate post-median line runs from $\frac{2}{3}$ of dorsum length to the distal flap of the pouch, in the middle sinuous. Marginal third of the wing dark brown, at termen more greyish. Hindwings bone-white, with a broad dark grey margin and costa, including the fringes. Underside unicolorous grey-brown, except for the bone-white dorsum. Hindwing as upperside but less pronounced.

Female with antennae, labial palpal, head and patagia brown with a reddish copper gloss. Tegulae of the same colour but with some white hairy scales. Thorax white with caudally more or less extended brown scaling. Legs unicolorous grey-brown. Abdomen grey-buff. The females are variable in the white pattern on the brown forewings being more or less extended. In pale specimens there is a conspicuous white zigzagging median band with a small discal brown spot. A large white basal patch but with the very wingbase dark brown. Subbasally there is a faint white patch. A faint undulate white post-median line which is curved in the cell along the large tooth of the median band. A buff coloured apical patch, in some specimens continued by a faint undulate marginal line. Fringes grey. Dark specimens resemble those of *inusitata* and *basialba* very much but there are differences. They always have the white basal patch, a remnant of the median band as a conspicuous white spot at the costa and an undulate line at the dorsum, and the buff coloured apical spot with undulate marginal line (not so in *basialba* and the head is dark brown in *zwieri* and bone-white in *inusitata*). Hindwings grey with the very wingbase whitish. Underside unicolorous grey but the costal spot still visible.

Male genitalia [gen.prep. RV1532]: Uncus long, slender and hooked with a sharp apex. Tegumen broad with parallel sides. Valvae rather narrow, cucullus in the center slightly sclerotized and with a broad heavy sclerotized curved rim at the base of the valva and running towards the clasper, apical third of cucullus slightly sclerotized with rounded apex and with a comb of curved setae. Clasper obliquely triangular, flat and stretched and with a sharp apex, strongly sclerotized, based on a distal oblique ridge which runs from costa to the end of the extension of the sacculus. Sacculus broad, from base distally tapering towards a solid curved extension with a blunt apex. Saccus arched, without a process. Juxta conversed "V"-shaped, rim rather narrow. Aedeagus broad and rather short, slightly sinuous. Vesica globular with some lobes. Dorsal lobe scobinated with numerous tiny chitin-



ous drops. Laterally a long straight bar-shaped cornutus which runs from base of vesica to the ventral lobe which has a field of large cone-shaped cornuti, at the edges accompanied by smaller cornuti.

Female genitalia [gen.prep. RV1533]: Ostium rim and antrum not sclerotized, ductus bursae funnel-shaped. Cervix bursae with a strongly sclerotized folded plate of about six ribs. Bursa copulatrix globular with one small signum at the bottom caudally. Signum constricted at one side but not deeply, covered entirely with coarse thorns and with one short projection. Appendix bursae broadly connected at the right side of the bursa copulatrix, shoe-shaped.

Distribution: The species has only been found in Walmak in the Jayawijaya Mountains, Papua, Indonesia, at an altitude of 1700 meters.

***Cyana (Cryptanaema) melanoplagia* (Hampson, 1900)**

ssp. ***melanoplagia* (Hampson, 1900)** (Plate 130 figs 7-8, plate 137 figs 1-2, plate 141 figs 9-10)

Holotype *melanoplagia* ♂ BMNH: Kapaur, S.W NGuinea, xii.1896-i.1897, Doherty, 97-165, *melanoplagia*, type ♂ Hmps.

References: *Chionaema melanoplagia* Hampson, 1900. *Catalogue Lepidoptera Phalaenae 2. Catalogue of the Arctiadae (Nolinae, Lithosianae) in the collection of the British Museum*. London, British Museum: 318; Draudt (1914: 173); Strand (1922: 685), as *Chionaema melanoplagia*.

ssp. ***orcheia* (Rothschild, 1916) stat. nov.** (Plate 131 figs 1-2, plate 137 figs 3-4, plate 142 figs 1-2)

Lectotype *orcheia* [designated from syntype series of 4♂ and 4♀] ♂ BMNH: Dampier Isl., ii-iii.1914, (Meek's Expedition), *Chionaema orcheia*, type Rothschild. Specimen [with round type label, paralectotypes without such label].

References: *Chionaema orcheia* Rothschild, 1916. *Novitates zoologicae* 23 (3): 327; Strand (1922: 686), as *Chionaema orcheia*.

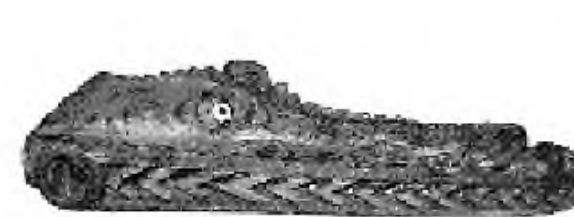
ssp. ***extrema* ssp. nov.** (Plate 131 figs 3-4, plate 137 figs 5-6, plate 142 figs 3-4)

Holotype ♂ BMNH: Goodenough Isl., 2500-4000 ft., iv.1913, A.S. Meek.

Paratypes 4♂ & 10♀ BMNH: Goodenough Isl., 2500-4000 ft., iii.1913 [4 ♂♂, 5 ♀♀], iv.1913 [5 ♀♀], A.S. Meek.

Diagnosis ssp. ***melanoplagia***: Forewings male 11.5-12 mm, female 12-13.5 mm. Males with antennae brown, labial palpa dark brown. Head dark brown but behind the antennae pale buff. Patagia and tegulae pale buff. Thorax and base of abdomen bone-white, distally abdomen dark grey with anal tuft buff. Legs brown with narrow white rings on the tarsi. Forewing short and broad, at $\frac{3}{4}$ of wing length the costa is bluntly angled from the distal flap of the narrow rectangular pouch, to the blunt apex. Termen round. Pouch bone-white with in the center a distinct dark brown costal patch, along the basal part of the costa usually somewhat suffused with brown scales. Forewing dominantly bone-white with buff apex and brown pattern with a purplish gloss. Below the costal pouch in the center of the wing a broad field of brownish narrow hairy scales which easily come off. This is best seen in fresh specimens. In fresh specimens a short straight brown line from the center of dorsum to the cubital vein. Post-medianline bone-white which runs from dorsum to costa with the dorsal half dentate, at the innerside bordered with brown and distally bordered by a conspicuous longitudinal brown patch which runs from tornus to the subapical area. Fringe line checkered brown. Hindwings bone-white, with a broad dark grey margin, including the fringes. Underside unicolorous grey-brown, except for the bone-white dorsum. Hindwing as upperside but less pronounced.

Female with antennae, labial palpa, head and patagia dark brown. Tegulae white, at base dark brown. Thorax white. Legs grey-brown with narrow white rings on the tarsi. Abdomen basally whitish, distally abdomen dark grey. There is some variation in the dark brown pattern being more or less extended. In extended patterned specimens the dominantly white forewings have a large median costal patch which is trapezium-shaped. Below this costal patch an almost straight narrow line runs to the dorsum and a short thin median line runs from dorsum to the wing fold. A large subapical costal patch which is crossed by the undulate and sinuous white post-median line which runs to the subtornal area and is dentate in the dorsal half. This dentate part at the innerside bordered with a fine brown line, distally bordered by a longitudinal tornal patch which runs to the subapical area. A row of small brown dots along the termen, fringes grey. Pale specimens lack the median lines and have reduced brown triangular patches along the costa and tornus. Hindwings grey with the very wingbase whitish. Underside of forewings grey with two narrow stripes along the costa, hindwings as upperside.



Diagnosis ssp. **orcheia**: Forewings male 11.5 mm, female 13 mm. Males in general as *melanoplagia* s.str. but with the bone-white colour replaced by buff. Dark brown pattern extended. Prothorax dark brown, the tornal patch larger and confluent with the dentate post-median line, a median patch at dorsum from which two more or less straight lines run to the costal patch. Hindwings as in the typical race.

Female with the white colour replaced by pale buff. The brown pattern much extended. Median costal patch dark brown and a dark brown discal spot present. Grey-brown tornal patch is connected with the subapical patch forming a broad submarginal band. Two straight median lines run from costal patch to dorsum. Hindwings as in the typical race.

Derivatio nominis **extrema** ssp. nov.: The name *extrema* refers to both, the extreme diffusion of the colour and the extreme far east distribution of this subspecies, on Goodenough Island.

Diagnosis ssp. **extrema** ssp. nov.: Forewings male 13 mm, female 14 mm. Male with the wing pattern as in the typical race but the ground colour of the forewing darkened to grey-brown. Hindwing with narrower grey hindmargin. Head and thorax unicolorous brown, base of abdomen with dark buff coloured hairy scales, distal part dark grey with a buff anal tuft.

Female with the ground colour unicolorous darkened to grey-brown, the dark brown pattern as in the typical race but with a small discal spot present. Hindwings grey with the very wing base whitish. Basal part of abdomen buff-grey, distal part dark grey.

Male genitalia [gen.prep. RV1512 (*melanoplagia*), RV1514, RV1518 (*orcheia*), RV1516 (*extrema*)]: Uncus long, slender and hooked with a sharp apex. Tegumen broad with parallel sides. Valvae distally gradually broadening, cucullus in the center slightly sclerotized, with a narrow rim running from costa towards the end of the extension of the sacculus. Apical third of cucullus slightly sclerotized with rounded apex and with a comb of curved setae. Clasper broad triangular, flat and with a sharp apex. Sacculus broad, distally tapering towards an extension with a small thorn. Saccus arched, without a process. Juxta conversed “U”-shaped, rim very broad. Aedeagus broad and rather short, distally slightly narrowing. Vesica globular with some lobes. Dorsal lobe with a field of tiny chitinous drops accompanied by a few larger thorn-shaped cornuti. Laterally a long sickle-shaped cornutus which runs from base of vesica to the ventral lobe which has a field of cone-shaped cornuti, ventrally accompa-

nied by smaller cornuti and chitinous drops.

Female genitalia [gen.prep. RV1513 (*melanoplagia*), RV1515, RV1519 (*orcheia*), RV1517 (*extrema*)]: Ostium rim and antrum not sclerotized, ductus bursae long and funnel-shaped. Cervix bursae with a slightly sclerotized folded plate with long ribs. Bursa copulatrix flattened globular with one small signum at the bottom caudally. Signum at one side constricted but not deep, covered with tiny thorns, along the edges with larger thorns. A large oval appendix bursae with a narrow connection at the right side of the bursa copulatrix.

Distribution: The species is confined to New Guinea and some adjacent islands. The nominotypical subspecies occurs on the mainland of New Guinea and the islands Waigeo and Japen at altitudes from sea level to 1500 meters and is most found in the Indonesian part of New Guinea. Subspecies *orcheia* is found on Karkar (formerly Dampier Island), Papua New Guinea and subspecies *extrema* ssp. nov. is found on Goodenough Island, D’Entrecasteaux Islands, Papua New Guinea.

Cyana (Cryptanaema) aroa (Bethune-Baker, 1904) (Plate 131 figs 5-6, plate 137 figs 7-8, plate 142 figs 5-6)

Holotype ♂ BMNH: British New Guinea, Upper Aroa River, iv.1903, (Meek), *Chionaema aroa*. Type, B-B. 1904.

References: *Chionaema aroa* Bethune-Baker, 1904 (nec *Scaptosyle aroa* Bethune-Baker, 1904). *Novitates zoologicae* 11 (2): 423; Draudt (1914: 173); Hampson (1914: 629); Strand (1922: 677), as *Chionaema aroa*.

Diagnosis: Forewings male 12 mm, female 14 mm. Male with antennae brown, palpa, head, patagia, tegulae and thorax dark brown. Legs and abdomen grey-brown. Rather broad longitudinal costal pouch strongly hairy scaled in the same colour of the forewing. Distal part of the pouch runs over the costal rim at two-third from wingbase. Forewing almost unicolorous dark brown with only a faint black post-median transverse band visible. Hindwings entirely grey-brown. Underside of fore- and hindwings in male unicolorous brown.

Female antennae brown, palpa, head, patagia, tegulae and thorax chocolate brown with some metallic shimmer. Legs and abdomen grey-brown. Forewings broad. Main colour of forewing in female is chocolate brown with a metallic shine. A faint pattern of some transverse bands formed by sprinkled blue-greyish scales, a post-median undulated line runs from costa to dorsum. In some specimens a distinct discal black spot is visible. Apical area



of the forewing usually greyish brown. Hindwings unicolorous grey-brown. Underside of fore- and hindwings in female unicolorous brown.

Male genitalia [gen.prep. RV1520]: Uncus long and slender. Tegumen broad, parallel sided. Valvae narrow and elongated, cucullus with only the costa completely sclerotized, the distal half of cucullus not sclerotized and with a narrow rounded apex. Long setae present on the apex. Saccus broadly based and gradually narrowing to a strong and curved extension with a hooked apex. Clasper rather small and narrow, like a spearhead-shaped ridge at the base of the saccus extension. Saccus flat, without a process. Aedeagus broad and very short. Vesica globular with three distinct lobes. The largest dorsal lobe with rather large coarse blunt thorns which decrease in size and spread distally and scobinated with tiny chitinous drops which continues distally and run to the distal lobe, in which again some blunt thorns are present. The basal ventral lobe only with some spread scobination of tiny chitine drops but connected to a band of heavy scobination at the distal part of the aedeagus.

Female genitalia [gen.prep. RV1521]: Ostium rim and antrum not sclerotized and with a rather broad ductus bursae. Bursa copulatrix oval shaped, cervix bursae partly sclerotized with a plate of strongly wrinkled folds. A small globular appendix bursae. Caudally, at the bottom of the bursa copulatrix, a small helmet-shaped arched signum present, with heavily thorned surface and edges.

Distribution: Not a common species. Locally found from eastern Papua, Indonesia, to Central Papua New Guinea from low land up to 1900 meters.

***Cyana (Cryptanaema) charybdis* (Bethune-Baker, 1904)** (Plate 131 figs 7-8, plate 138 figs 1-2, plate 142 figs 7-9)

= *Chionaema nigrescens* Rothschild, 1913

syn. nov. *Novitates zoologicae* 20 (1): 193; Draudt (1914: 173); Hampson (1914: 630); Strand (1922: 686): *Chionaema nigrescens*.

Lectotype *charybdis* [designated from syntype series of 1♂ and 1♀] ♂ BMNH: British New Guinea, Dinawa, 4,000 ft., ix.1902, Coll. A.E. Pratt, *Chionaema charybdis*. Lectotype *nigrescens* [designated from syntype series of 1♂ and 1♀] ♂ BMNH: British New Guinea, Biagi, Mambare River, 5000 ft., iii.1906, (A.S. Meek), *Chionaema nigrescens*, Type Rothschild.

References: *Chionaema charybdis* Bethune-Baker, 1904. *Novitates zoologicae* 11 (2): 423; Draudt

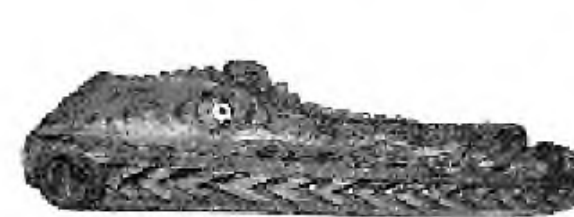
(1914: 172); Hampson (1914: 630), as *Chionaema charybdis*; Strand (1922: 682), as *Chionaema fumea charybdis*.

Diagnosis: Forewings male 15 mm, female 20 mm. Male with antennae brown, palpa, head, patagia, tegulae and thorax dark brown. Legs and abdomen grey. Pouch strongly hairy scaled in the same colour of the forewing. Distal part of the pouch runs over the costal rim at two-third from wingbase. Forewing dark brown with some transverse lines. The undulate subbasal line and zigzagging post-median line sharply defined, the median line faintly visible. Hindwings grey-brown with a grey faint discal spot. Underside of fore- and hindwings in male unicolorous brown with a discal spot in the hindwing.

Female antennae brown, palpa, head, patagia, tegulae and thorax like in male brown. Legs and abdomen grey. Forewings broad, dark brown. A pattern of zigzagging black transverse lines, especially the post-median and submarginal line. Two black spots present in the cell, the discal spot and one more basally. Hindwings unicolorous grey-brown with a faint grey discal spot. Underside of fore- and hindwings in female unicolorous brown with a discal spot in the hindwings.

Male genitalia [gen.prep. RV1524]: Uncus long and slender, apex sharp and slightly hooked. Tegumen broad, with diverging sides. Valvae elongated, cucullus spoon-shaped, the basal half sclerotized, the distal half of cucullus not sclerotized and with a broad rounded apex. Saccus narrow based, elongated with an extension which is apically curved into a broad sharply hooked apex. Clasper very small, integrated in the middle of the long saccus as a hooked flap pressed against the surface. Saccus shallow, without a clear process. Aedeagus broad and short, distally slightly tapering and with a scobulated ring. Vesica globular with two distinct lobes. Ventrally (in picture on top) with a straight bar which has a keel in the middle. A central band with large elongated cornuti, the basal cornuti being the largest and some even confluent. The dorsal lobe (in picture on bottom) with tiny chitinous drops.

Female genitalia [gen.prep. RV1525]: Ostium rim and antrum heavily sclerotized, wide funnel-shaped continued in a bowl-shaped connection to a short and rather broad ductus bursae. Cervix bursae large and swollen with some chitinous folds, for the greater part covered with tiny chitinous needles. Bursa copulatrix oval shaped, broadly connected with the cervix bursae. A small globular appendix bursae caudally at the bottom of the bursa copula-



trix. At the right flank a small bowl-shaped signum present, with thorned surface and edges.

Distribution: Widely distributed in New Guinea at higher altitudes, from 1200 up to 2000 meters.

Cyana (Cryptanaema) fumea (Hampson, 1900)

(Plate 132 figs 1-2, plate 138 figs 3-4, plate 143 figs 1-3)

= *Chionaema melanochlorus* Rothschild, 1916

syn. nov. *Novitates zoologicae* 23 (3): 328; Strand (1922: 685), as *Chionaema melanochlorus*.

Holotype *fumea* ♂ BMNH: Kapaur, S.W New Guinea, Dec. 96-Jan. 97., Doherty., 97-165, *Chionaema fumea*, type ♂ Hmps.

Lectotype *melanochlorus* [designated from syntype series of 1♂ and 1♀] ♂ BMNH: Dampier Isl., ii-iii.1914, (Meek's Expedition), *Chionaema melanochlorus*, Type, Rothschild.

References: *Chionaema fumea* Hampson, 1900. *Catalogue Lepidoptera Phalaenae* 2. *Catalogue of the Arctiadae (Nolinae, Lithosianae) in the collection of the British Museum*. London, British Museum: 317; Draudt (1914: 173); Strand (1922: 682), as *Chionaema fumea*; Holloway (2001: 331), as *Cyana fumea*.

Diagnosis: Forewings male 10.5 mm, female 12 mm. Male with antennae brown, palpa, head, patagia, tegulae and thorax grey-brown. Legs and abdomen grey, the basal part of abdomen paler grey, with an ochreous anal tuft. Pouch along the forewing costa narrow with only short scales. Forewing grey-brown with some faint darker and paler transverse bands. Most conspicuous is the somewhat paler central area which also crosses the pouch and a dark brown triangular costal patch which is connected to the black discal spot. In f. *melanochlorus* the transverse bands are more contrasted with an undulate paler post-median line and pale submarginal band. Hindwings white with the margins suffused with grey-brown, especially at the costa and apical area. Underside of forewings grey-brown, hindwings as upperside but with a discal spot.

Female with head, thorax and abdomen as in male. Forewings broad, grey-brown. Dark pattern concentrated in the middle area but very diffuse. Two black spots present in the cell, the discal spot and one more basally. Hindwings white with a broad grey-brown area along the costa and apex and with a faint grey discal spot. Underside with forewings grey-brown, hindwings as upperside but with a discal spot.

Male genitalia [gen.prep. RV1536]: Uncus long and slender, apex sharp and slightly hooked. Tegumen broad, with diverging sides. Valvae long, the basal half of cucullus sclerotized, the distal half of cucullus not sclerotized but at the costal area slightly sclerotized. Apex of cucullus extended, finger-shaped and connected with soft tissue at the extension of the sacculus. Sacculus basally broadly fused with the cucullus and gradually narrowing and elongated with an extension which is slightly curved. At the apex a small thorn. Clasper small, a thin hook which is pressed against the surface. Saccus flat, without process. Aedeagus rather long and curved, distally with some thorns at the incised rim. Vesica globular with two distinct lobes. Ventrally with a straight bar with both ends sharp. Ventral lobe furthermore with a field of small sharp cornutal thorns. A central band with about ten large sharp cornuti, the more distally on the vesica, the more blunt the cornutus. The dorsal lobe with tiny chitinous drops.

Female genitalia [gen.prep. RV1537]: Ostium rim and antrum heavily sclerotized, wide funnel-shaped, antrum short, followed by a rather broad ductus bursae. Cervix bursae consists of two parts, a smaller wrinkled part which is hardly sclerotized, and a large and swollen part with folds and wrinkles which is for the greater part sclerotized. Bursa copulatrix globular, broadly connected with the cervix bursae. A small globular appendix bursae caudally attached to the right side of the cervix bursae. At the right side of the bursa copulatrix a small irregular shaped signum present compiled of clustered blunt thorns.

Distribution: A common species in New Guinea from lowland areas up to 900 meters. It is also found on Dampier Island (Papua New Guinea) where the few known specimens have a more contrasted pattern and were described as *melanochlorus* by Rothschild (1916), but the species is rather variable in pattern all over New Guinea and there is no reason to even consider *melanochlorus* to be of subspecies level.

Cyana (Cryptanaema) punctistrigosa (Rothschild, 1913) (Plate 132 figs 3-4, plate 138 figs 5-6, plate 143 figs 4-5)

Holotype ♂ BMNH: Mt. Goliath, 5000 ft., Centr. Dutch N.Guinea, about 139. long., iii.1911, (A.S. Meek), *Chionaema punctistrigosa*, Type Rothschild.

References: *Chionaema punctistrigosa* Rothschild, 1913. *Novitates zoologicae* 20 (1): 225; Draudt (1914: 174); Hampson (1914: 627); Strand



(1922: 689), as *Chionaema punctistrigosa*.

Diagnosis: Forewings male 12-13 mm, female 14.5 mm. Male with palpal black, apical segment pale buff. Head, antennae, thorax and legs pale buff. Thorax with two black spots caudally and tegulae with a black spot at base, all these black spots with a purple metallic shimmer. Abdomen basally pale yellow, in the middle brown and with a pale yellow anal tuft. Pouch along the forewing costa narrow with only short scales. Forewing pale buff with black pattern with purple shimmer. Pattern of dots and broken bands: a distinct black basal spot, a conspicuous black subbasal costal patch continued by some small subbasal spots towards dorsum, a median dorsal black bar running from dorsum to the cubital vein, a small black discal spot and one just below the pouch, the black post-median line undulated and with teeth but incomplete, apical area suffused with black but leaving a buff subapical costal patch. Hindwings pale yellow with a grey-brown hindmargin, at the apex broader. Underside of forewings buff but the pouch black, hindwings as upperside but hindmargin faint.

Female with head, thorax and abdomen as in male but head with on the vertex a black spot with purple shimmer and spots on the thorax larger. Legs buff with grey suffusion. Forewings broad, pale buff with a pinkish tinge. Black pattern more contrasted than in male, all with purple shimmer: the median band almost completely running from dorsum to costa but in the discal area thin and in some specimens broken and with a tiny spot basal of it, the post-median line consists of a sinuous row of black teeth, a distinct round discal spot and a smaller spot on the cubital vein more basally, the marginal area almost entirely black except for the buff subapical costal patch and a buff patch above the tornus. Hindwings pale yellow with a broad brown hindmargin and a faint discal stripe. Underside with forewings brown with the pattern accentuated, hindwings as upperside but with pattern more accentuated.

Male genitalia [gen.prep. RV1527]: Uncus long and slender, blunt apex. Tegumen broad, with diverging sides. Valvae with cucullus flat and slightly sclerotized, the costa more sclerotized, at apex ventrally falcate with a sharp hook. Saccus rather narrow with a short extension, apex of extension with a small blunt tooth pointing inwards. Clasper triangular with a sharp hooked apex, flat and pressed against the saccus. Saccus flat, without process. Aedeagus short and broad, distally narrowing and with four thorns on a strongly sclerotized rotary saw-shaped apex. Vesica globular with some indistinct lobes. Ventrally with a sclerotized curved plate

and a scobinated field of chitinous drops. Distally with a few rows of large shark teeth-shaped cornuti in a field of tiny chitinous drops.

Female genitalia [gen.prep. RV1526]: Ostium rim and antrum not sclerotized, ductus bursae short and rather narrow. Transition of cervix bursae and bursa copulatrix unclear, widely connected. Cervix bursae with some sclerotized wrinkles and with surface entirely covered with tiny chitinous needles which continues half way the bursa copulatrix. A small globular appendix bursae attached with a long ductus distally, on top of the cervix bursae. At the right side of the bursa copulatrix a small bowl shaped signum present with sharp thorns of which some larger.

Distribution: Locally a common species in New Guinea, also known from Japan Island. Found at altitudes from 150 to 1500 meters.

***Cyana (Cryptanaema) gracilis* sp. nov.** (Plate 132
figs 5-6, plate 138 figs 7-8, plate 143 figs 6-7)

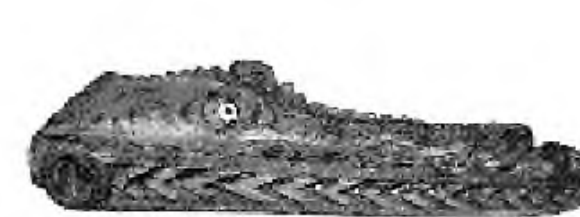
Holotype ♂ KSP: Indonesia, Papua, Kab. Sarmi, Mamberamo Basin, Peg. Foja, 2°34.5' S - 138°42.9' E, 1650 m, 23.xi-7.xii.2005, Henk van Mastrigt/CI-RAP, KSP42271.

Paratypes 2♀ KSP: same as holotype, KSP42283 & KSP42284.

Derivatio nominis: The species is named *gracilis* to emphasize the delicate pattern of fine stripes and lines in the male and female of this species.

Diagnosis: Forewings male 13 mm, female 15-16 mm. The species is strongly sexually dimorphic. Male (holotype) with palpal brown. Head, thorax and abdomen bone-white, antennae buff. Thorax with a dorsal black central stripe. Pouch along the forewing costa narrow with only short scales. Forewing narrow, marbled with black, grey and brown into a complex pattern of patches and lines. At the dorsum a pale buff area with two longitudinal brown lines, the central area below the cubital vein bluish grey. Basal half of costal area dark brown and the distal half of the costal area pale buff, apical area darker buff. In the pale buff area a black discal spot is present, more basal a larger black spot at the border of the dark and pale areas. A fine brown sinuous median line crosses the wing from costa to dorsum just basad from the discal spot. In the marginal field the veins are black with a white spot each in the rim of the margin. Fringes grey. Hindwings bone-white with snow-white fringes.

Female with palpal brown. Head bone-white, patagia buff, tegulae and thorax chocolate brown with some bluish grey scales on the metathorax. Abdo-



men bone-white. Forewing rather narrow, main colour bluish grey and white. Costal half of basal area chocolate brown, at dorsum sprinkled with bluish grey. A broad bluish grey subbasal line, bordered by a thin grey line which ends at the costa in a chocolate brown triangular spot. Median and post-median area greyish white, with a faint grey discal spot and with a grey sinuous median line running from dorsum to costa where it ends in a second chocolate brown triangular spot, the post-median field bordered by a grey line which ends at the costa in a third chocolate brown triangular spot. The three costal spots lay in a snow-white costal area which continues in the submarginal field. A stretched triangular chocolate brown tornal patch which continues in an incomplete submarginal line consisting of a few remaining spots. Marginal field bone-white, marginal line grey with some faint checkering spots in the bone-white fringes. Hindwings bone-white with a narrow grey marginal line. Fringes snow-white.

Male genitalia [gen.prep. KSP42271]: Uncus straight, long and slender, apex with a small thorn. Tegumen broad, with diverging sides. Valvae with cucullus flat and at costal half sclerotized, apex ventrally curved with a sharp hook, apical rim irregular by pustulations of setae. Sacculus broadly based and with a folded rim which runs into a short extension with a sharp apex. Clasper narrow and stretched triangular with a blunt apex, accompanied by a narrow ridge which runs from the center of the cucullus and meets the clasper at its apex. Saccus shallow, without process. Aedeagus short and broad, distally deeply incised. Vesica globular with some lobes. Ventrally with a straight sclerotized bar with both sides blunt. Distally with a field of large blunt cornuti, accompanied by a field of chitinous drops. The smaller dorsal lobe without scobination or cornuti.

Female genitalia [gen.prep. KSP42283, KSP42284]: Ostium rim and antrum not sclerotized, ductus bursae short. Transition of cervix bursae and bursa copulatrix unclear, widely connected, both globular but all together rather small. Cervix bursae with a large twisted and folded sclerotized plate and at the right side widely attached to a globular appendix bursae. At the bottom of the bursa copulatrix a small star-shaped signum, covered and edged with sharp thorns.

Distribution: This species has been found during the Foja Mountains Expedition in 2005 in Papua, Indonesia. It is probably endemic for the area.

Cyana (*Cryptanaema*) *brunnea* (Bethune-Baker, 1904) (Plate 132 figs 7-8, plate 139 figs 1-2, plate 143 figs 8-9)

Holotype ♂ BMNH: British New Guinea, Upper Aroa River, ii.1903, (Meek), *Chionaema brunnea*. Type.

References: *Chionaema brunnea* Bethune-Baker, 1904. *Novitates zoologicae* 11 (2): 423; Draudt (1914: 173); Rothschild (1915: 48); Strand (1922: 678), as *Chionaema brunnea*.

Diagnosis: Forewings male 11-12 mm, female 13-14 mm. Male with a broad head with large eyes. Head, antennae, palpal and thorax dark brown. Abdomen grey, in the middle darker grey. Thorax and abdomen with long hairs, especially at the ventral side. Pouch along the forewing costa broad with long hairy scales, distal half overlapping the costal rim. Forewing broad, main colour brown with a purple and copper shimmer. At the dorsum in the median field on vein A2+3 a pale yellow streak and a complex pattern of yellow scratches around it. The narrow post-median line slightly undulate and curved to and running over the apex of the costal pouch which in some specimens even forms a costal patch. In some specimens a submarginal row of small yellow dots present but usually faint or absent. Fringes dark grey. Hindwings grey. Underside unicolorous grey-brown, the costal pouch brown.

Female with head, antennae, palpal and thorax brown. Abdomen dark grey. Forewing broad, main colour brown with a slight purple shimmer. Dorsal area with some faint yellow scratches, post-median line yellow, undulate and running obliquely from costa and with a sudden bend running obliquely to dorsum at two-third from base. A faint submarginal row of yellow dots present. A small black discal spot and longitudinal spot more basad. Fringes dark grey. Some specimens are more obscurely patterned but at least some yellow pattern and the black discal spot are present. Hindwings grey. Underside unicolorous grey-brown.

Male genitalia [gen.prep. RV1522]: Uncus straight, long and slender with a sharp apex. Tegumen very broad, with almost circular sides. Valvae of a different type than all other *Cryptanaema* species. Valvae elongate with cucullus at costal rim broadly sclerotized and with long setae which are all directed dorsally, ventral side only slightly sclerotized. A rounded subbasal lobe at the costal rim, costa furthermore straight but with at the very apex ventrally falcate. Sacculus short and rather broad, distal half gradually tapering and with its sharp apex reaching one-third of valvae length. Clasper at the inner rim of the distal part of sacculus elongate



triangular with a long, slender and curved blunt hook. Saccus wide, with a shallow process or keel. Aedeagus rather long and distally gradually narrowing, at distal rim undeeply incised. Vesica at base near the incision of aedeagus with a sclerotized slightly curved bar with at one side small thorns. At globular vesica a double row of sharply hooked cornuti and distally with some larger sharp cone-shaped cornuti, ventral lobe with scobination. Female genitalia [gen.prep. RV1523]: Ostium rim and antrum strongly sclerotized. Antrum "U"-shaped with a funnel-shaped ventral plate. Antrum a straight tube, at full length sclerotized but at ventral side interrupted, followed by a short ductus bursae. Cervix bursae hardly sclerotized, with numerous wrinkles, and widely connected to the globular bursa copulatrix. A smaller globular appendix bursae attached to a lobe at the right side of the bursa copulatrix. A very small signum as a rosette of blunt thorns present at the lower ventral side of the bursa copulatrix.

Distribution: A rather common species which is found widely distributed in New Guinea in mountainous areas at moderate altitudes.

Key to the *Cyana* species from New Guinea

- 1 Forewing with red or orange or entirely black with blue shimmer (subgenus **Clerckia**) 2
 - Forewing different 13
- 2 Forewing entirely black with steel blue shimmer, center of hindwing hyaline *posthyalina*
 - Forewing with red or orange 3
- 3 Males (with costal pouch), forewing deeply red, hindwings entirely black *metamelas*
 - Forewing with orange-red to orange-yellow, hindwings with yellow 4
- 4 Hindwings with black margin dentated at inside
..... *dentimarginata*
 - Hindwings with black margin at inside without dentation 5
- 5 Hindwings with dorsum broadly black 6
 - Hindwings with dorsum yellow or narrowly black 8
- 6 Fringes at dorsum yellow *thoracica* (male)
 - Fringes at dorsum black 7
- 7 Forewings and/or hindwings with orange-yellow postmedian band *thoracica* (female)
 - Forewings red with a narrow black rim *trigona*
- 8 Black rim at forewing tornus conspicuously broader than at termen and costa 9
 - Black rim at forewing tornus not distinctly broader than termen and dorsum 11
- 9 Black margin at forewing termen broad
..... *tegyra retracta*
 - Black margin at forewing termen rather narrow 10

- 10 Black margin at forewing tornus broadly intruding to wing center *tegyra tegyra*
 - Black margin at forewing tornus gradually narrowing to wing base *metamelas* (female)
- 11 Hindwing with black margin equally broad, innerside diffuse *simonthomasi*
 - Hindwing with black margin gradually narrowing to tornus 12
- 12 Forewing orange, black rim narrow, along costa equally thin *tricolora*
 - Forewing orange-red, black rim at costa broadening ..
..... *tegyra postdivisa*
- 13 Forewings bone-white with black transverse lines (subgenus **Cyana**) 14
 - Forewings without black transverse lines (subgenus **Cryptanaema**) 15
- 14 Forewings with at least 4 transverse lines, including a basal line *transfasciata*
 - Forewings with 3 transverse lines, including a basal line *binigrofasciata*
- 15 Forewings in majority dark brown without distinct pale pattern 16
 - Forewings with pale marbled pattern or clear patches 21
- 16 Hindwings white with dark margin 17
 - Hindwings uniformly grey, with or without a darker discal spot 18
- 17 Hindwing snow-white with dark suffusion along costa and termen *fumea*
 - Hindwing bone-white with broad marginal band
..... *melanoplaga extrema* (male)
- 18 Hindwing grey with a more or less distinct darker discal spot *charybdis*
 - Hindwing grey and without a discal spot 19
- 19 Forewing with distinct dark triangular costal patches *melanoplaga extrema* (female)
 - Forewing without distinct triangular costal patches
..... 20
- 20 Forewing dark brown with (at least traces of a) yellowish post median line
brunnea
 - Forewing dark grey-brown with faint darker pattern
..... *aroa*
- 21 Forewing at costa with a pouch or pocket (**males**) ...
..... 22
 - Forewing costa without a pouch or pocket (**females**) .
..... 30
- 22 Hindwings whitish without complete darker marginal band 23
 - Hindwings with a darker marginal band 26
- 23 Margin of forewing and entire hindwing snow-white *albimarginalis*
 - Margin of forewing and entire hindwing not snow-white 24
- 24 Forewings white with a complex pattern of dark patches *nigroplagata*
 - Forewings not white and with a complex dark pattern 25



25 Forewings with large (sub)apical patch, hindwings entirely white	<i>gracilis</i>	– Hindwing with broad dark marginal band	32
– Forewings with apical patch, hindwings at costa and apex suffused	<i>basialba</i>	32 Pale colour in hindwing yellowish, forewing with punctated post median line	<i>punctistrigosa</i>
26 Hindwing margin narrow, forewing buff with oblique broken fascia	<i>punctistrigosa</i>	– Pale colour in hindwing whitish	33
– Hindwing margin broad	27	33 Forewing black with pattern of white patches and spots	<i>nigroplagata</i>
27 Forewing with dark oblique stretched triangular tornal patch	28	– Forewing with sharp angled bluish grey median band and central area	<i>molbakon</i>
– Forewing with tornal patch if present not stretched triangular or absent	29	34 Forewing for the greater part whitish with dark costal patches	35
28 Forewing without median transverse lines, reduced dark pattern	<i>melanoplagia</i> s. s.	– Forewing for the greater part dark brown with white pattern	36
– Forewing with median transverse lines, extended pattern	<i>melanoplagia orcheia</i>	35 Forewings bone-white with sharp dark pattern	
29 Forewing white with broad broken dark median band, head whitish	<i>inusitata</i>		<i>melanoplagia melanoplagia</i>
– Forewing with whitish dorsal patch, head dark brown	<i>zwieri</i>	– Forewings buff with diffuse dark pattern	
30 Hindwing at least half of it whitish or yellowish	31		<i>melanoplagia orcheia</i>
– Hindwing almost completely grey	34	36 Head whitish	<i>inusitata</i>
31 Hindwing completely white, forewings pale grey with dark subapical patch	<i>gracilis</i>	– Head dark brown	37
		37 Forewing with white apical patch	<i>basialba</i>
		– Forewing without apical patch, yellowish subapical spot present	<i>zwieri</i>

Genitalia slides examined (Table 1)

Taxon	♂	♀
<i>Cyana (Cyana) transfasciata</i>	BM-RV1528	BM-RV1529
<i>Cyana (Cyana) binigrofasciata</i>	KSP-24241	
<i>Cyana (Clerckia) metamelas</i>	NHMUK-010313308	
<i>Cyana (Clerckia) posthyalina</i>	RMNH-RV1544	
<i>Cyana (Clerckia) dentimarginata</i>	RMNH-RV1549	
<i>Cyana (Clerckia) tegyra tegyra</i>	BM-RV1545	
<i>Cyana (Clerckia) tegyra postdivisa</i>	RMNH-RV1546	RMNH-RV1547
<i>Cyana (Clerckia) tricolora</i>	RMNH-RV1559	
<i>Cyana (Clerckia) trigona</i>	RMNH-RV1557	RMNH-RV1558
<i>Cyana (Clerckia) simonthomasi</i>	RMNH-RV1550	
<i>Cyana (Clerckia) thoracica</i>	RMNH-RV1555/RV1560/RV1561	BM-RV1548; RMNH-RV1556
<i>Cyana (Cryptanaema) nigroplagata</i>	RMNH-RV1530	RMNH-RV1531
<i>Cyana (Cryptanaema) albimarginalis</i>	KSP-65627	
<i>Cyana (Cryptanaema) basialba</i>	KSP-24243	KSP-24244;RMNH-RV1534
<i>Cyana (Cryptanaema) molbakon</i>		RMNH-RV1567
<i>Cyana (Cryptanaema) inusitata</i>		RMNH-RV1535/RV1539/RV1540/RV1541
<i>Cyana (Cryptanaema) zwieri</i>	RMNH-RV1532	RMNH-RV1533
<i>Cyana (Cryptanaema) melanoplagia melanoplagia</i>	BM-RV1512	BM-RV1513
<i>Cyana (Cryptanaema) melanoplagia orcheia</i>	BM-RV1514/RV1518	BM-RV1515/RV1519
<i>Cyana (Cryptanaema) melanoplagia extrema</i>	BM-RV1516	BM-RV1517
<i>Cyana (Cryptanaema) aroa</i>	BM-RV1520	BM-RV1521
<i>Cyana (Cryptanaema) charybdis</i>	BM-RV1524	BM-RV1525
<i>Cyana (Cryptanaema) fumea</i>	RMNH-RV1536	BM-RV1537
<i>Cyana (Cryptanaema) punctistrigosa</i>	RMNH-RV1527	BM-RV1526
<i>Cyana (Cryptanaema) gracilis</i>	KSP-42271	KSP-42283/42284
<i>Cyana (Cryptanaema) brunnea</i>	BM-RV1522	BM-RV1523

Acknowledgements

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tions. I thank Martin Honey, who has now retired, and Alberto Zilli, his successor, for their help and permission to have access in the important collection (BMNH) and the dissections, preparations and photographing of the type of *Cyana metamelas* that



Alberto Zilli made; the late Henk van Mastrigt who provided me of specimens to dissect and his assistant and successor Miss Evie Lily Warikar (KSP) who helped me greatly with information on labels and sizes of specimens; I thank Luc Willemse (RMNH), who as head of the Entomology department is responsible for the collection in which I work and I could have had access to for this study; Dr. Willem N. Ellis (Amsterdam, The Netherlands) I am grateful for his help concerning the foodplant of *Cyana simonthomasi*; Kees van den Berg (RMNH) who helped me with digitalized images of the genitalia; and last but not least the Uyttenboogaart-Elisasen Stichting (The Netherlands) for financing the surveys to Papua which made collection of fresh material and the study of the KSP collection (Waeana, Papua, Indonesia) and that of BMNH (London, United Kingdom) possible.

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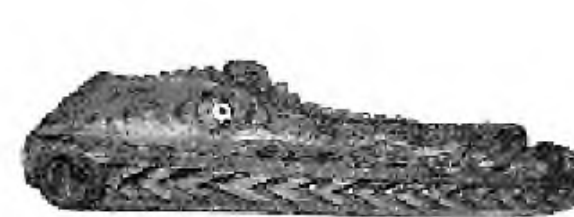


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DE VOS, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



Figures 1-4. Papuan *Cyana* (*Cyana*) species. 1-2 – *C. (C.) transfasciata* (Rothschild, 1912): 1 – Lectotype ♂, Utakwa River, Papua, Indonesia (BMNH); 2 – ♀ Setekwa River, Papua, Indonesia (BMNH); 3-4 – *C. (C.) binigrofasciata* spec. nov.: 3 – Holotype ♂, Marina Valen, Papua, Indonesia (KSP); 4 – Paratype ♂, Marina Valen, Papua, Indonesia (RMNH).



Figures 5-8. Papuan *Cyana* (*Clerckia*) species. 5-6 – *C. (Cl.) metamelas* (Hampson, 1914): 5 – Holotype ♂, Mimika River, Papua, Indonesia (BMNH); 6 – ♀ (presumed to belong to *C. metamelas*) Wangaar, Papua, Indonesia (BMNH); 7 – *C. (Cl.) posthyalina* sp. nov., holotype ♂, Batanta Island, Papua Barat, Indonesia (RMNH); 8 – *C. (Cl.) dentimarginata* spec. nov., holotype ♂, Andai, Papua Barat, Indonesia (RMNH).

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DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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Figures 1-8. Papuan *Cyana* (*Clerckia*) species. 1-2 – *C. (Cl.) tegyra tegyra* (Druce, 1899): 1 – Holotype ♂, Fergusson Island, Papua New Guinea (BMNH); 2 – ♀ from Goodenough Island, Papua New Guinea (BMNH); 3-4 – *C. (Cl.) tegyra postdivisa* (Rothschild, 1913): 3 – ♂ from Gn. Meja Reserve, Manokwari, Papua Barat, Indonesia (RMNH); 4 – ♀ from Numfor Island, Papua, Indonesia (BMNH); 5-6 – *C. (Cl.) tegyra retracta* (Draudt, 1914): 5 – Holotype ♂, New Britain, Papua New Guinea (BMNH); 6 – ♀ from New Ireland, Papua New Guinea (BMNH); 7-8 – *C. (Cl.) tricolora* (Butler, 1877): 7 – ♂ from Mabilabol, Star Mts, Papua, Indonesia (RMNH); 8 – Holotype ♀, Aru Islands, Indonesia (BMNH).

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DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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Figures 1-8. Papuan *Cyana* (*Clerckia*) species. 1-2 – *C. (Cl.) trigona* Rothschild, 1903: 1 – ♂ from Walmak, Jayawijaya Mts, Papua, Indonesia (RMNH); 2 – ♀ from Walmak, Jayawijaya Mts, Papua, Indonesia (RMNH); 3-4 – *C. (Cl.) simonthomasi* sp. nov.: 3 – Holotype ♂, Kota Nica, Papua, Indonesia (RMNH); 4 – Paratype ♀, Genjem, Papua, Indonesia (RMNH); 5-8 – *C. (Cl.) thoracica* Rothschild, Jordan, 1901: 5 – Lectotype ♂, Humboldt Bay, Papua, Indonesia (BMNH); 6 – ♂ from Rasiei, Wandammen Peninsula, Papua Barat, Indonesia (RMNH); 7 – ♂ from Dotir, Wandammen Peninsula, Papua Barat, Indonesia (RMNH); 8 – ♀ from Landikma, Jayawijaya Mts, Papua, Indonesia (RMNH).

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DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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Figures 1-8. Papuan *Cyana* species. 1-2 - *C. (Clerkia) thoracica* Rothschild, Jordan, 1901: 1 - ♀ from Etna Bay, Papua, Indonesia (RMNH); 2 - Holotype ♀ *Chionaema croceizona*, Wataikwa River, Papua, Indonesia (BMNH-1689257); 3-4 - *C. (Cryptanaema) nigroplagata* (Bethune-Baker, 1910): 3 - ♂ from Pass Valley, Jayawijaya Mts, Papua, Indonesia (RMNH); 4 - ♀ from Walmak, Jayawijaya Mts, Papua, Indonesia (RMNH); 5 - *C. (Cr.) albimarginalis* sp. nov. holotype ♂, Mokndoma, Sudirman Mts, Papua, Indonesia (KSP- 65627); 6-7 - *C. (Cr.) basialba* (Rothschild, 1913): 6 - ♂ from Wondiboy Mts, Wandammen Peninsula, Papua Barat, Indonesia (KSP-24243); 7 - ♀ from Mabilabol, Star Mts, Papua, Indonesia (RMNH); 8 - *C. (Cr.) molbakon* sp. nov. holotype ♀, Molbakon, Star Mts, Papua, Indonesia (RMNH).

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DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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Figures 1-8. Papuan *Cyana* (*Cryptanaema*) species. 1-3 – *C. (Cr.) inusitata* (Bethune-Baker, 1910): 1 – ♂ from Lelambo, Jayawijaya Mts, Papua, Indonesia (RMNH); 2 – ♀ from Mabilabol, Star Mts, Papua, Indonesia (RMNH); 3 – ♀ dark form, Senopi, Tamrau Plateau, Papua Barat, Indonesia (RMNH); 4-6 – *C. (Cr.) zwieri* sp. nov.: 4 – Holotype ♂, Walmak, Jayawijaya Mts, Papua, Indonesia (RMNH); 5 – Paratype ♀, Walmak, Jayawijaya Mts, Papua, Indonesia (RMNH); 6 – ♀ dark form, Walmak, Jayawijaya Mts, Papua, Indonesia (RMNH); 7-8 – *C. (Cr.) melanoplagia melanoplagia* (Hampson, 1900): 7 – ♂ from Mabilabol, Star Mts, Papua, Indonesia (RMNH); 8 – ♀ from Warkapi, Arfak Mts, Papua Barat, Indonesia (RMNH).

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DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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Figures 1-8. Papuan *Cyana* (*Cryptanaema*) species. 1-2 – *C. (Cr.) melanoplugia orcheia* (Rothschild, 1916): 1 – Lectotype ♂, Dampier Island [Karkar], Papua New Guinea (BMNH); 2 – ♀ from Dampier Island (= former Karkar), Papua New Guinea (BMNH); 3-4 – *C. (Cr.) melanoplugia extrema* ssp. nov.: 3 – Holotype ♂, Goodenough Island, Papua New Guinea (BMNH); 4 – Paratype ♀, Goodenough Island, Papua New Guinea (BMNH); 5-6 – *C. (Cr.) aroa* (Bethune-Baker, 1904): 5 – Holotype ♂, Upper Aroa River, Papua New Guinea (BMNH); 6 – ♀ from Upper Aroa River, Papua New Guinea (BMNH); 7-8 – *C. (Cr.) charybdis* (Bethune-Baker, 1904): 7 – ♂ from Walmak, Jayawijaya Mts, Papua, Indonesia (RMNH); 8 – ♀ from Mokwam, Arfak Mts, Papua Barat, Indonesia (RMNH).

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DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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Figures 1-8. Papuan *Cyana* (*Cryptanaema*) species. 1-2 – *C. (Cr.) fumea* (Hampson, 1900): 1 – ♂ from Prafi, Birds-head Peninsula, Papua Barat, Indonesia (RMNH); 2 – ♀ from Warkapi, Arfak Mts, Papua Barat, Indonesia (RMNH); 3-4 – *C. (Cr.) punctistrigosa* (Rothschild, 1913): 3 – ♂ from Dotir, Wandammen Peninsula, Papua Barat, Indonesia (RMNH); 4 – ♀ from Mt. Goliath (Gn. Yamin), Star Mts., Papua, Indonesia (BMNH); 5-6 – *C. (Cr.) gracilis* sp. nov.: 5 – Holotype ♂, Foja Mts, Papua (KSP-42271); 6 – Paratype ♀, Foja Mts, Papua (KSP-42284); 7-8 – *C. (Cr.) brunnea* (Bethune-Baker, 1904): 7 – ♂ from Hydrographer Mts, Papua New Guinea (BMNH); 8 – ♀ from Fakfak, Papua Barat, Indonesia (BMNH).

Plate 133

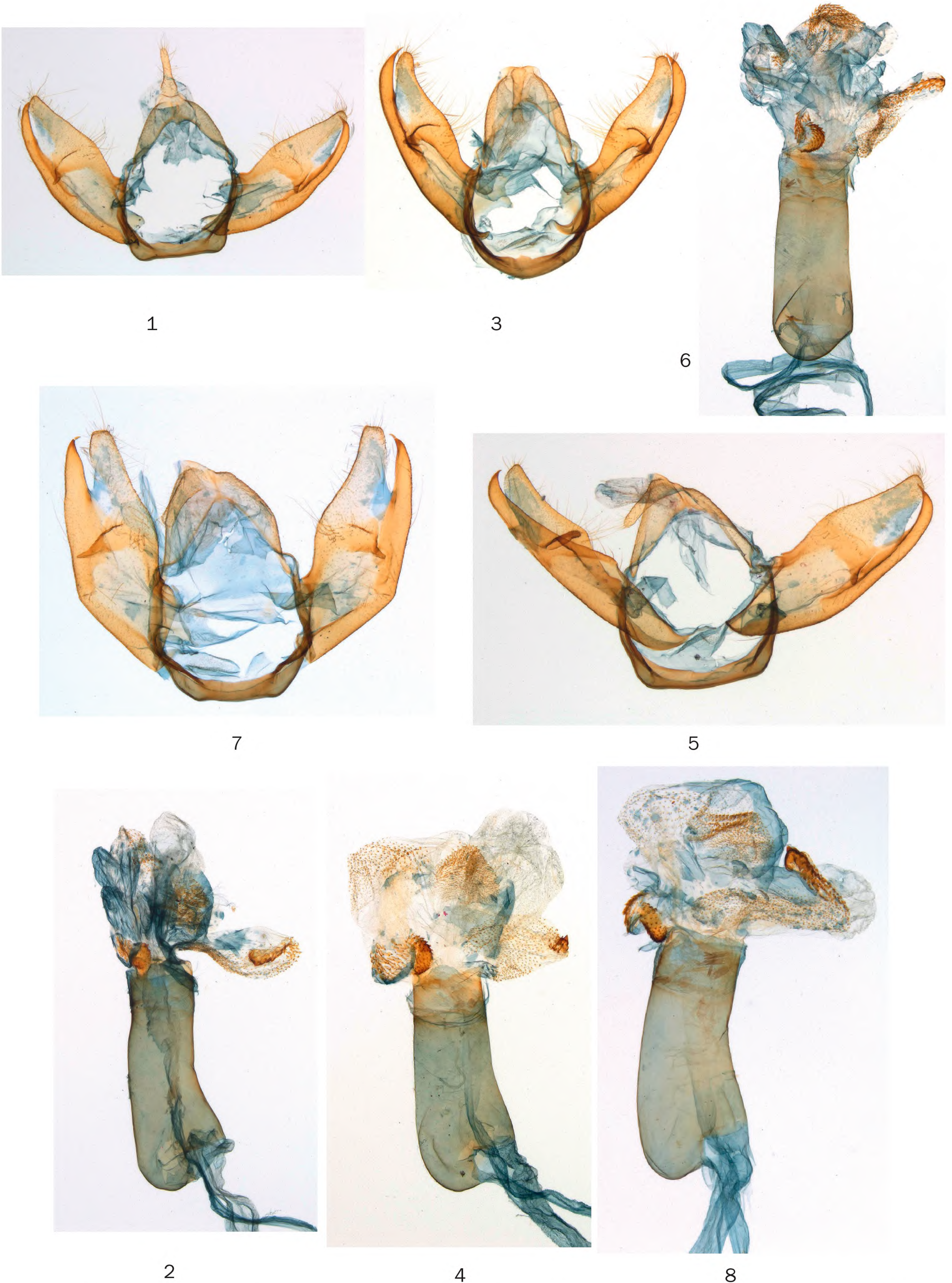
DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



Figures 1-8. Male genitalia of *Cyana* species. 1-2 – *Cyana (Cyana) transfasciata* (Rothschild, 1912) prep. BM-RV1528: 1 – Habitus genitalia; 2 – Aedeagus; 3-4 – *C. (C.) binigrofasciata* sp. nov. prep. KSP-24241: 3 – Habitus genitalia; 4 – Aedeagus; 5-6 – *C. (Clerckia) metamelas* (Hampson, 1914) prep. NHMUK_010313308: 5 – Habitus genitalia; 6 – Aedeagus; 7-8 – *C. (Cl.) posthyalina* sp. nov. prep. RV1544: 7 – Habitus genitalia; 8 – aedeagus.

Plate 134

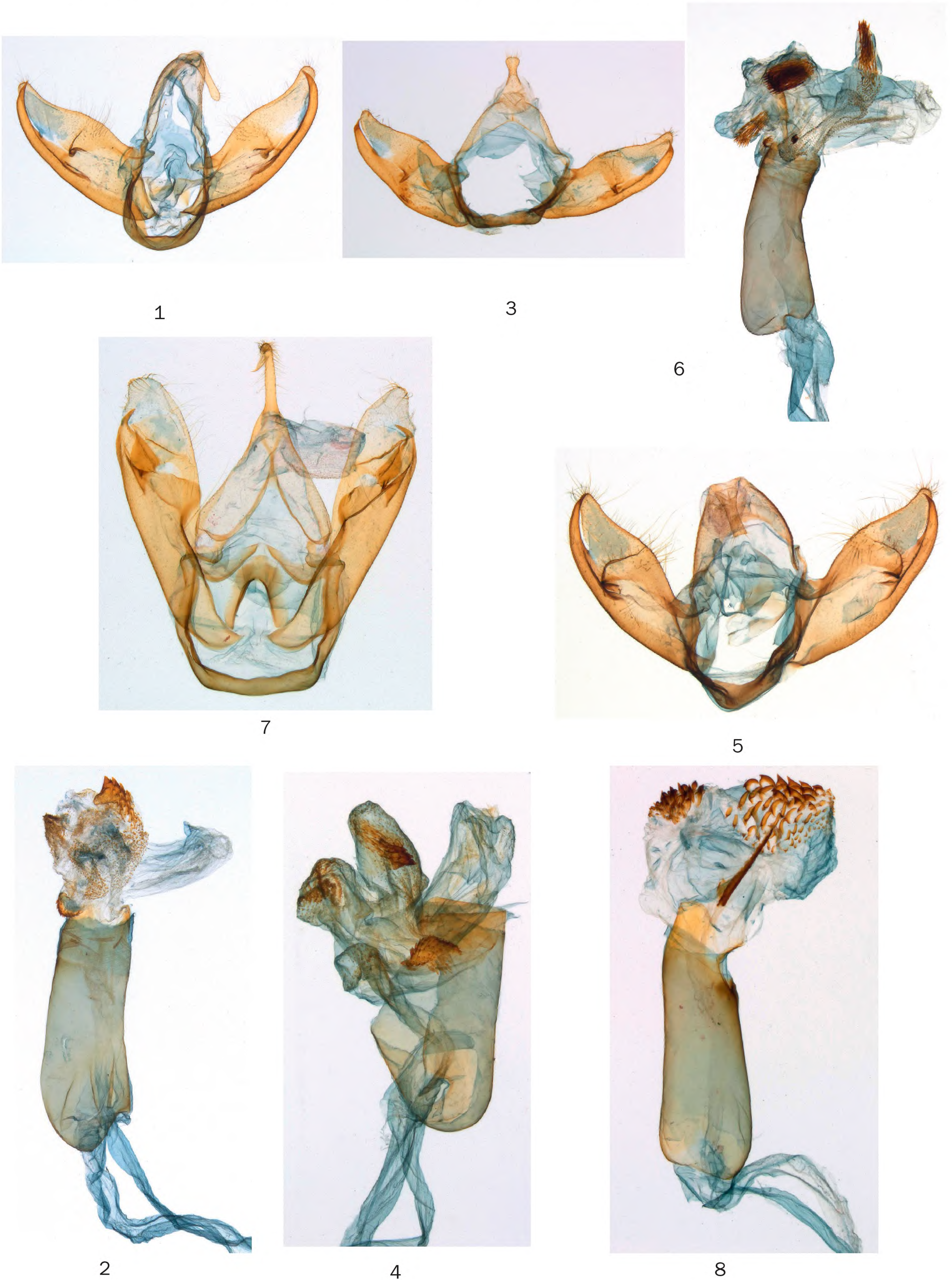
DE VOS, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



Figures 1-8. Male genitalia of *Cyana* (*Clerckia*) species. 1-2 – *C. (Cl.) dentimarginata* sp. nov. prep. RV1549: 1 – Habitus genitalia; 2 – Aedeagus; 3-4 – *C. (Cl.) tegyra tegyra* (Druce, 1899) prep. BM-RV1545: 3 – Habitus genitalia; 4 – Aedeagus; 5-6 – *C. (Cl.) tegyra postdivisa* (Rothschild, 1913) prep. RV1546: 5 – Habitus genitalia; 6 – Aedeagus; 7-8 – *C. (Cl.) tricolora* (Butler, 1877) prep. RV1559: 7 – Habitus genitalia; 8 – Aedeagus.

Plate 135

DE VOS, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



Figures 1-8. Male genitalia of *Cyana* species. 1-2 – *C. (Clerckia) trigona* Rothschild, 1903 prep. RV1557: 1 – Habitus genitalia; 2 – Aedeagus; 3-4 – *C. (Cl.) simonthomasi* sp. nov. prep. RV1550: 3 – Habitus genitalia; 4 – Aedeagus; 5-6 – *C. (Cl.) thoracica* Rothschild, Jordan, 1901 prep. RV1555: 5 – Habitus genitalia; 6 – Aedeagus; 7-8 – *Cyana (Cryptanaema) nigroplagata* (Bethune-Baker, 1910) prep. RV1530: 7 – Habitus genitalia; 8 – Aedeagus.

Plate 136

DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



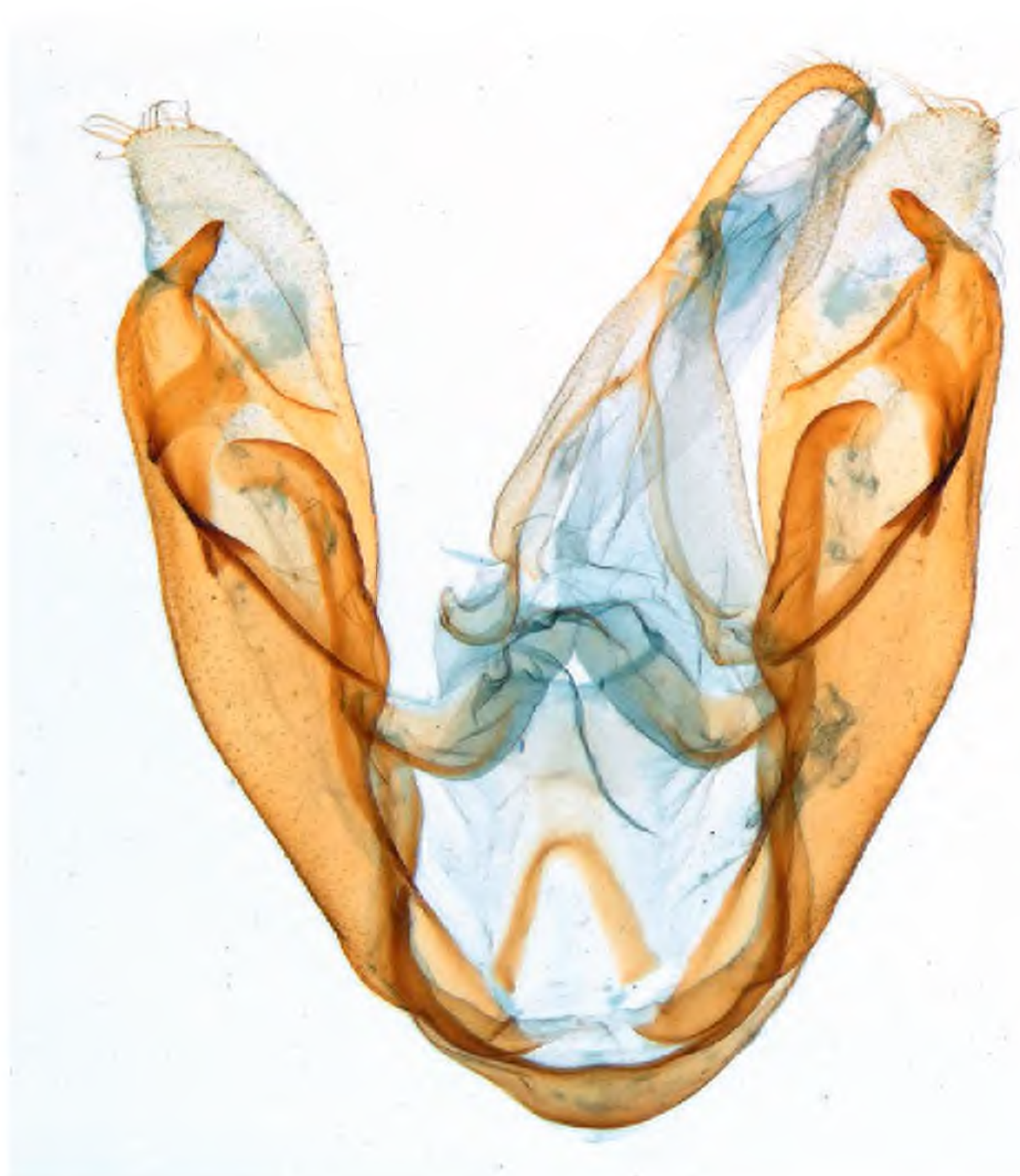
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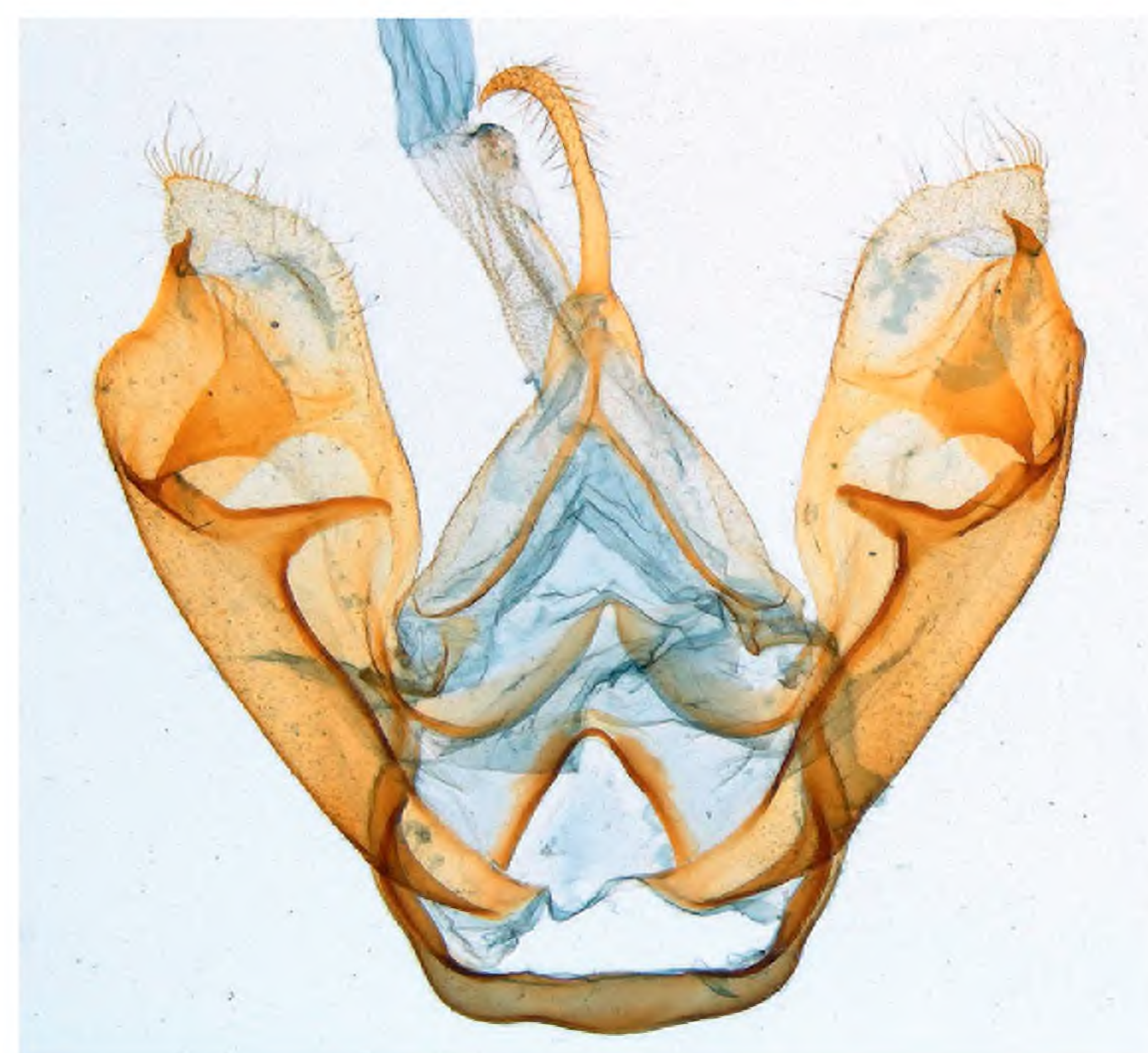
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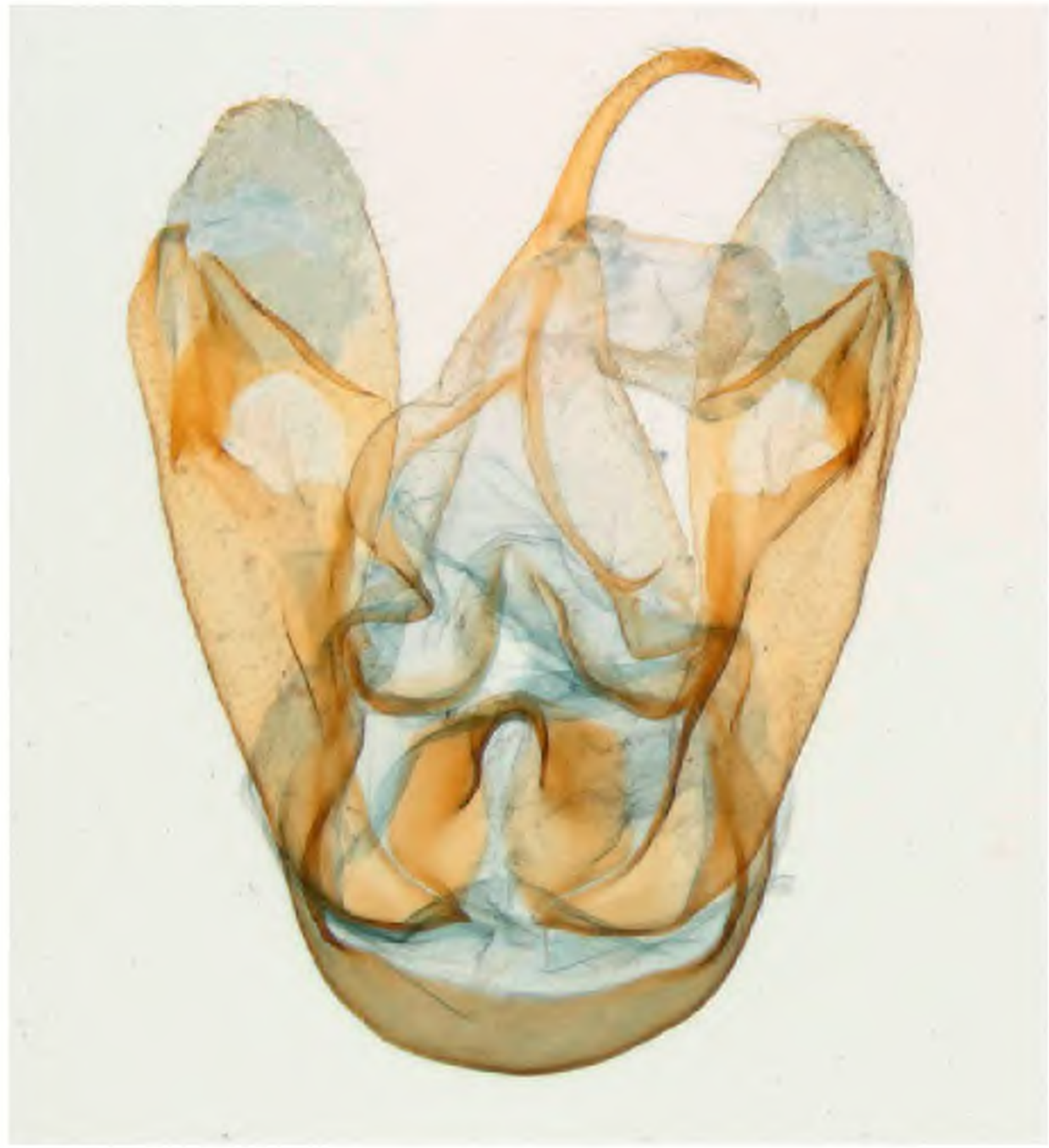


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Figures 1-8. Male genitalia of *Cyana* (*Cryptanaema*) species. 1-2 – *C. (Cr.) albimarginalis* sp. nov. prep. KSP-65627: 1 – Habitus genitalia; 2 – Aedeagus; 3-4 – *C. (Cr.) basialba* (Rothschild, 1913) prep. KSP-24243: 3 – Habitus genitalia; 4 – Aedeagus; 5-6 – *C. (Cr.) inusitata* (Bethune-Baker, 1910) prep. RV1538: 5 – Habitus genitalia; 6 – Aedeagus; 7-8 – *C. (Cr.) zwieri* sp. nov. prep. RV1532: 7 – Habitus genitalia; 8 – Aedeagus.

Plate 137

DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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Figures 1-8. Male genitalia of *Cyana* (*Cryptanaema*) species. 1-2 – *C. (Cr.) melanoplagia melanoplagia* (Hampson, 1900) prep. BM-RV1512: 1 – Habitus genitalia; 2 – Aedeagus; 3-4 – *C. (Cr.) melanoplagia orcheia* (Rothschild, 1916) prep. BM-RV1514: 3 – Habitus genitalia; 4 – Aedeagus; 5-6 – *C. (Cr.) melanoplagia extrema ssp. nov.* prep. BM-RV1516: 5 – Habitus genitalia; 6 – Aedeagus; 7-8 – *C. (Cr.) aroa* (Bethune-Baker, 1904) prep. BM-RV1520: 7 – Habitus genitalia; 8 – Aedeagus.

Plate 138

DE VOS, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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Figures 1-8. Male genitalia of *Cyana* (*Cryptanaema*) species. 1-2 – *C. (Cr.) charybdis* (Bethune-Baker, 1904) prep. BM-RV1524: 1 – Habitus genitalia; 2 – Aedeagus; 3-4 – *C. (Cr.) fumea* (Hampson, 1900) prep. RV1536: 3 – Habitus genitalia; 4 – Aedeagus; 5-6 – *C. (Cr.) punctistrigosa* (Rothschild, 1913) prep. RV1527: 5 – Habitus genitalia; 6 – Aedeagus; 7-8 – *C. (Cr.) gracilis* sp. nov. prep. KSP-42271: 7 – Habitus genitalia; 8 – Aedeagus.

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DE VOS, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



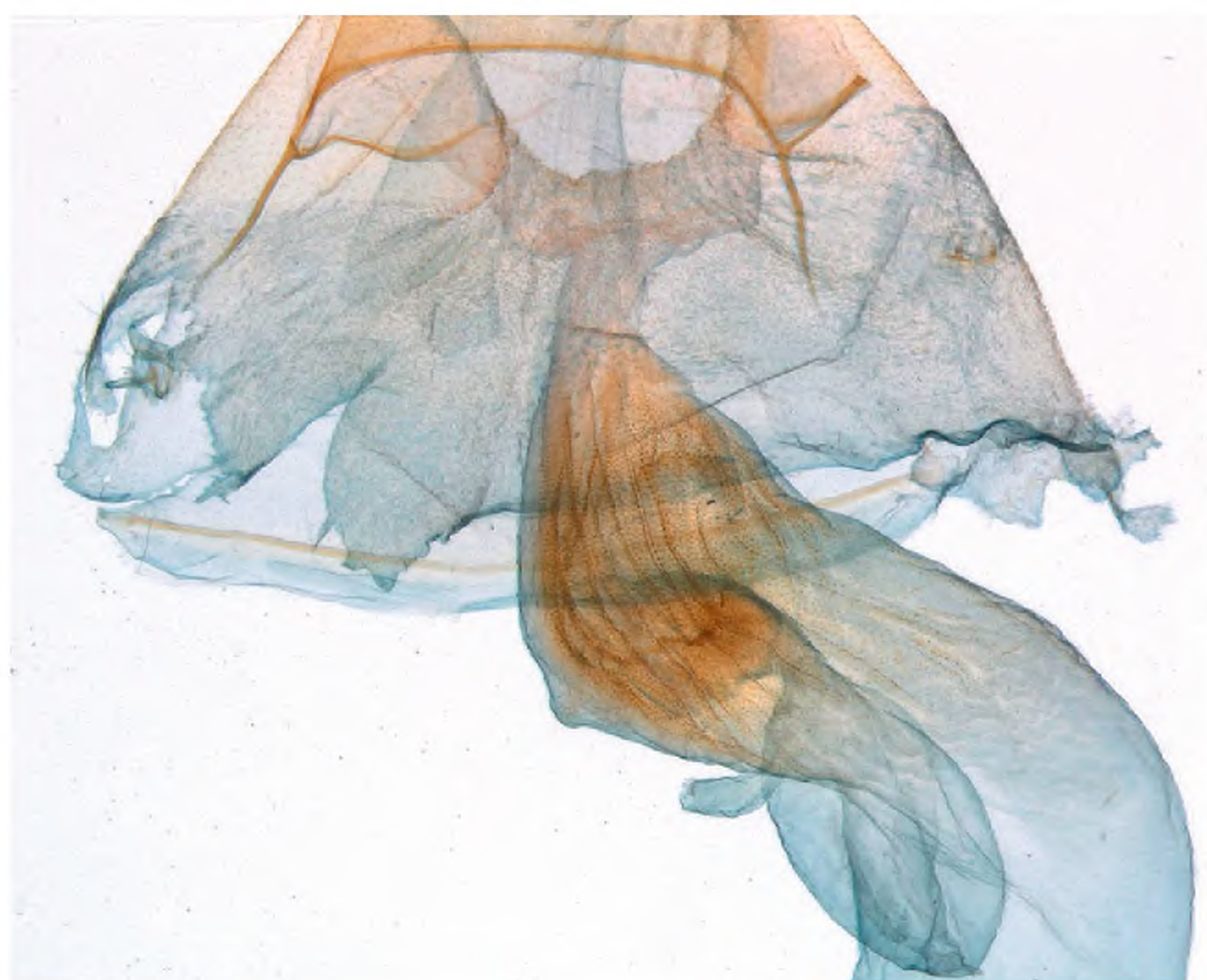
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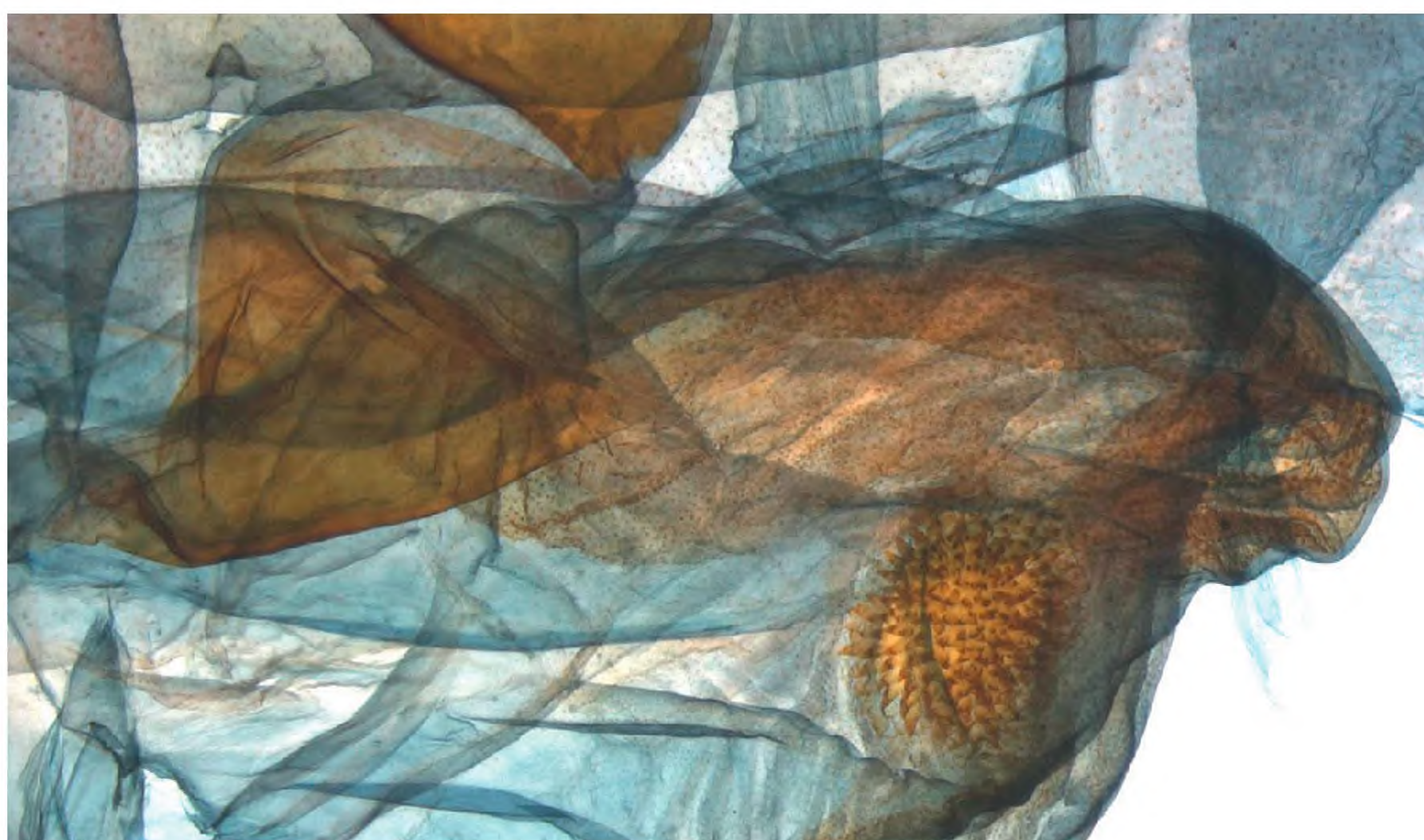
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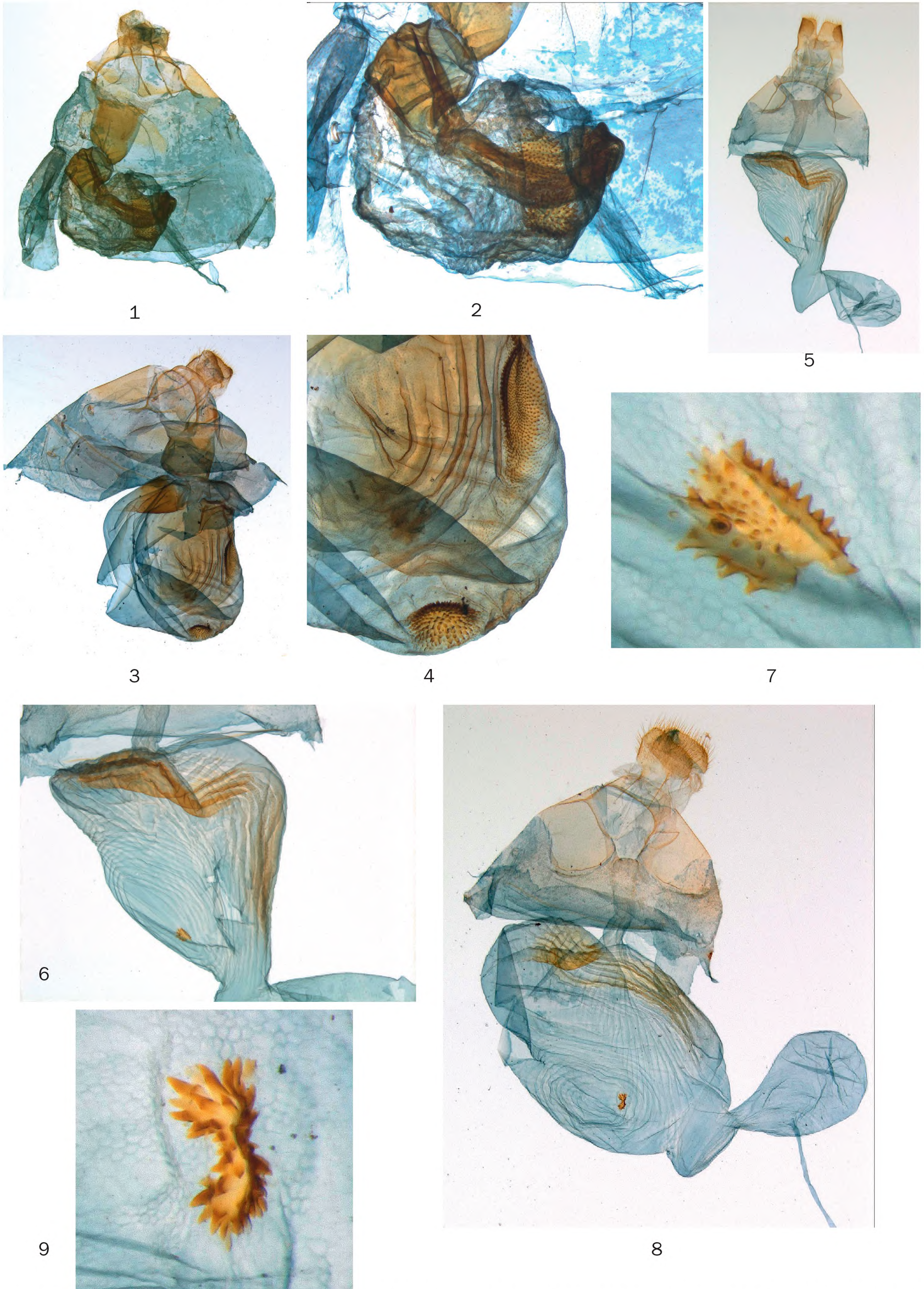


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Figures 1-7. Male and female genitalia of *Cyana* species. 1-2 – Male genitalia of *Cyana (Cryptanaema) brunnea* (Bethune-Baker, 1904) prep. BM-RV1522: 1 – Habitus genitalia; 2 – Aedeagus; 3-5 – Female genitalia of *Cyana (Cyana) transfasciata* (Rothschild, 1912) prep. BM-RV1529: 3 – Habitus genitalia; 4 – Cervix; 5 – Signum; 6-7 – Female genitalia of *Cyana (Clerckia) tegyra postdivisa* (Rothschild, 1913) prep. RV1547: 6 – Habitus genitalia; 7 – Cervix and signum.

Plate 140

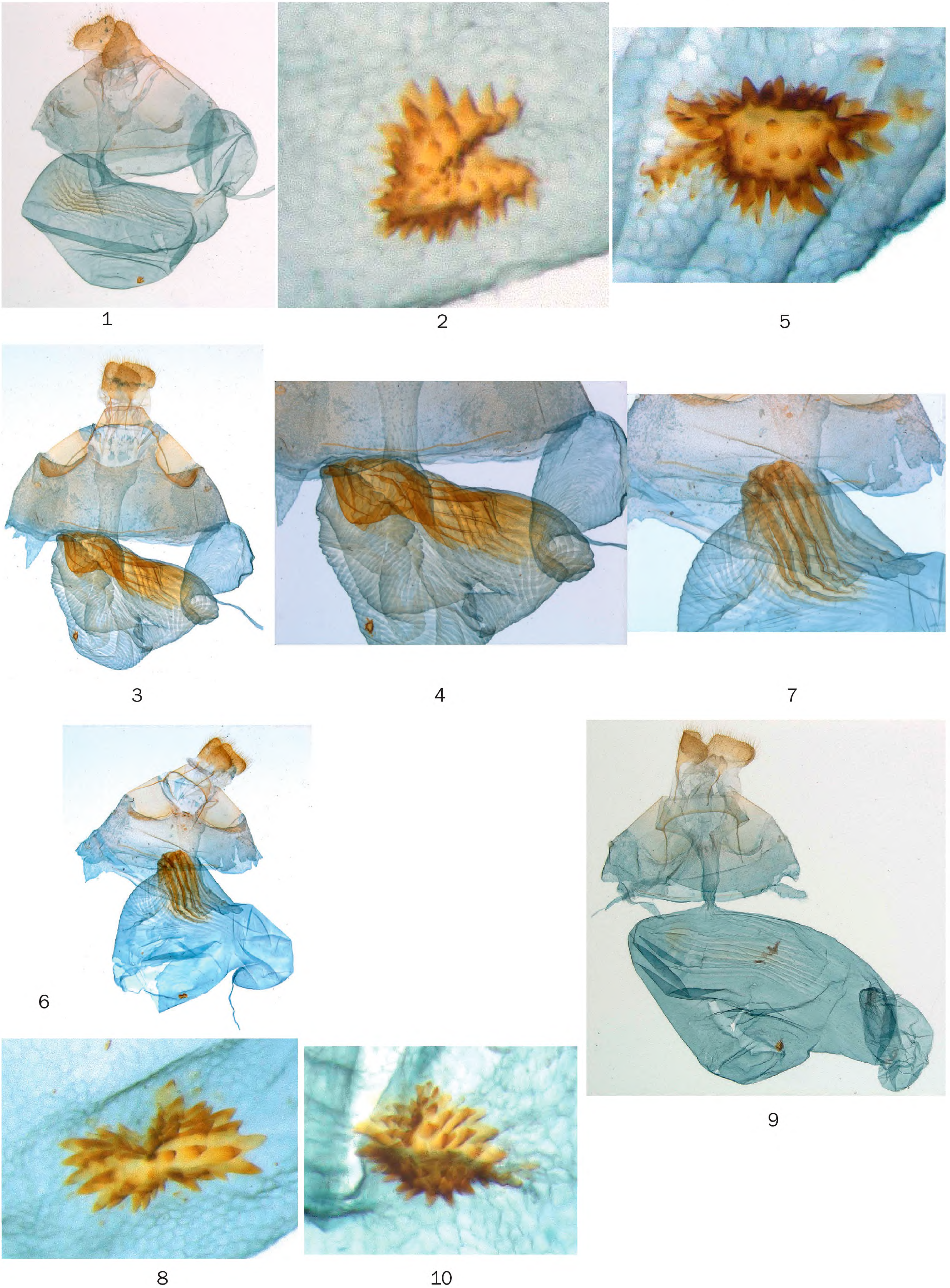
DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



Figures 1-9. Female genitalia of *Cyana* species. 1-2 – *C. (Clerckia) trigona* Rothschild, 1903 prep. RV1558: 1 – Habitus genitalia; 2 – Cervix and signum; 3-4 – *C. (Cl.) thoracica* Rothschild, Jordan, 1901 prep. RV1556: 3 – Habitus genitalia; 4 – Cervix and signa; 5-7 – *C. (Cryptanaema) nigroplagata* (Bethune-Baker, 1910) prep. RV1531: 5 – Habitus genitalia; 6 – Cervix and Signum; 7 – Signum; 8-9 – *C. (Cr.) basialba* (Rothschild, 1913) prep. RV1534: 8 – Habitus genitalia; 9 – Signum.

Plate 141

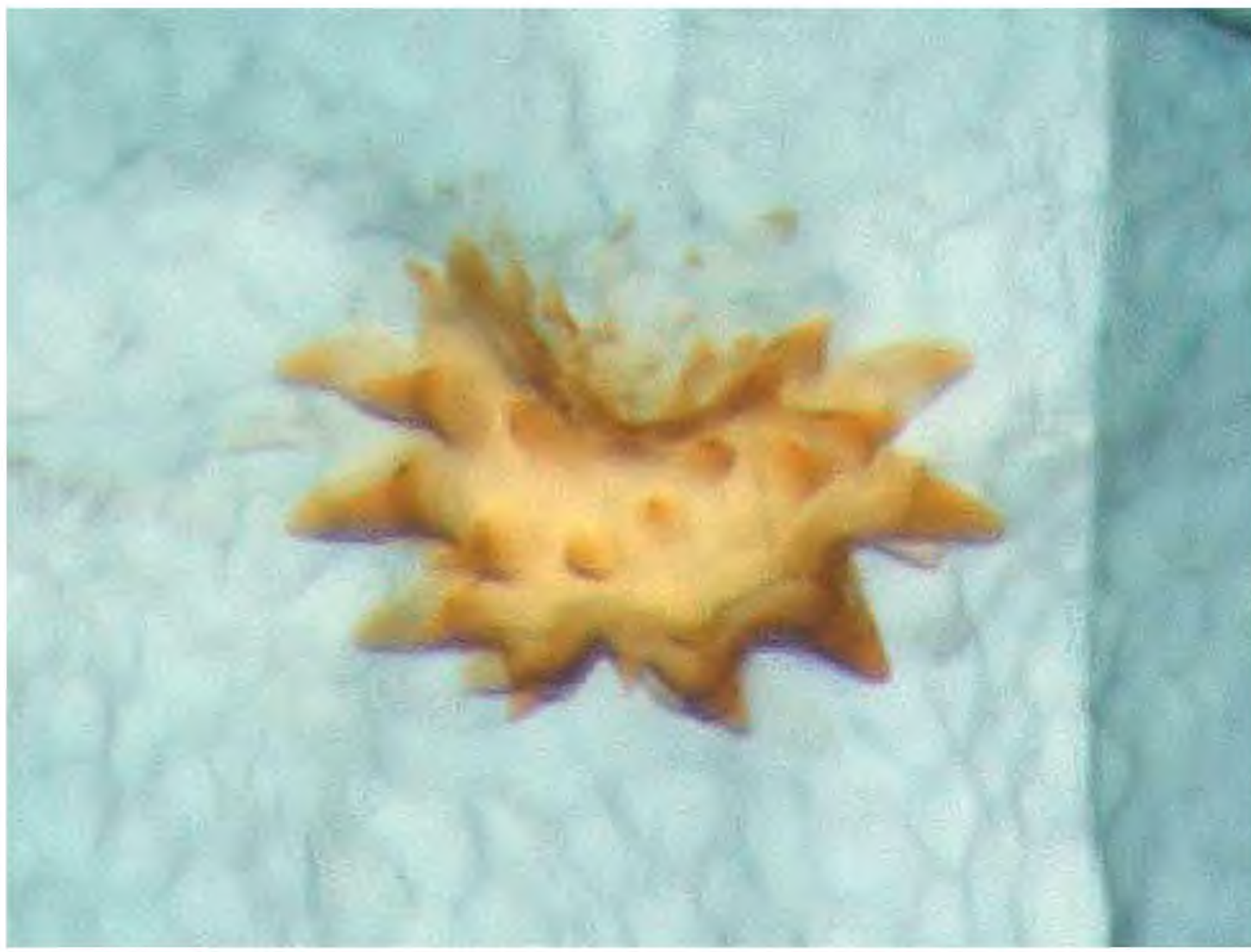
DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



Figures 1-10. Female genitalia of *Cyana* (*Cryptanaema*) species. 1-2 – *C. (Cr.) molbakon* sp. nov. prep. RV1567: 1 – Habitus genitalia; 2 – Signum; 3-5 – *C. (Cr.) inusitata* (Bethune-Baker, 1910) prep. RV1539: 3 – Habitus genitalia; 4 – Cervix; 5 – Signum; 6-8 – *C. (Cr.) zwieri* sp. nov. prep. RV1533: 6 – Habitus genitalia; 7 – Cervix; 8 – Signum; 9-10 – *C. (Cr.) melanoplaga melanoplaga* (Hampson, 1900) prep. BM-RV1513: 9 – Habitus genitalia; 10 – Signum.

Plate 142

DE VOS, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



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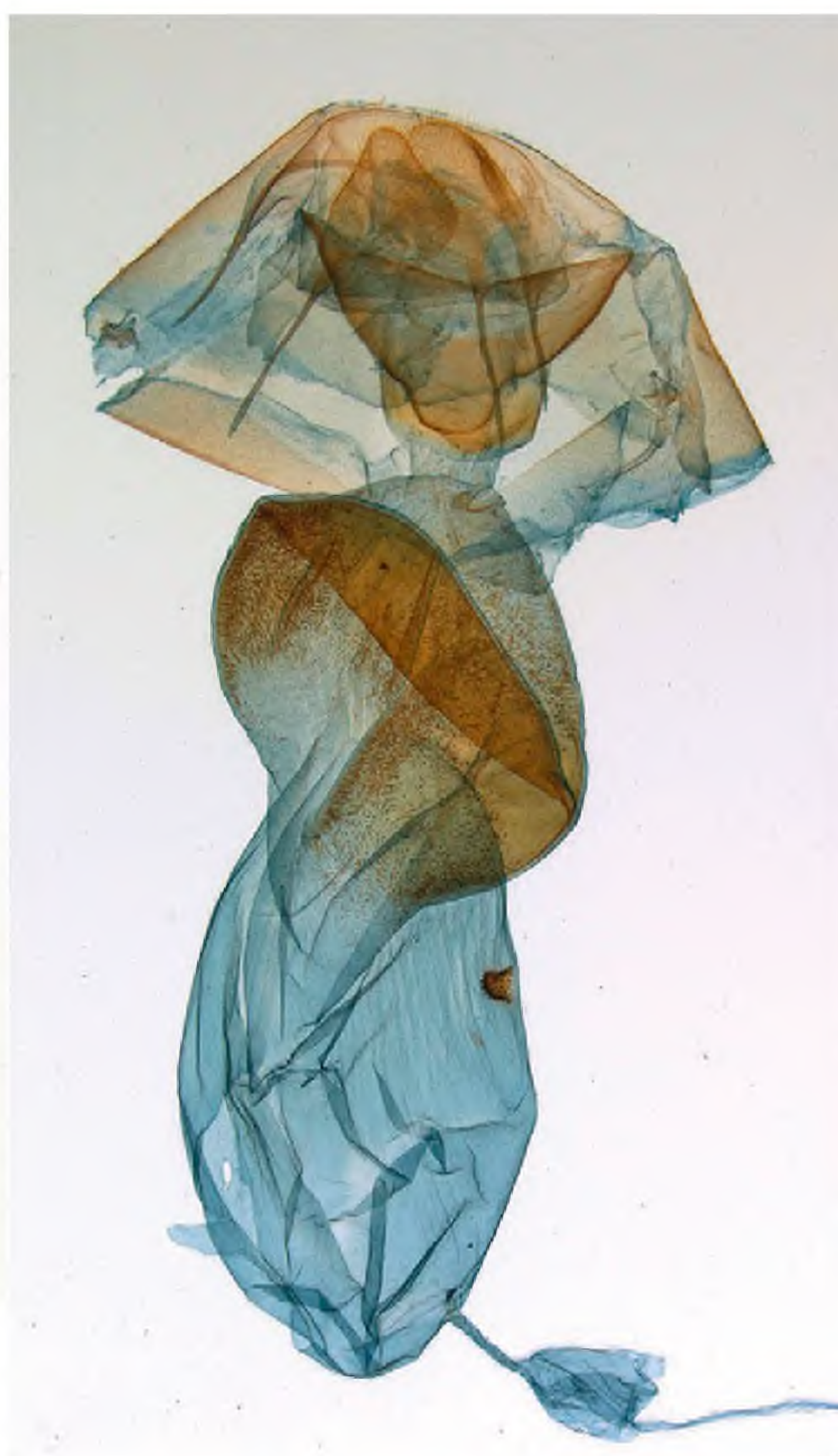
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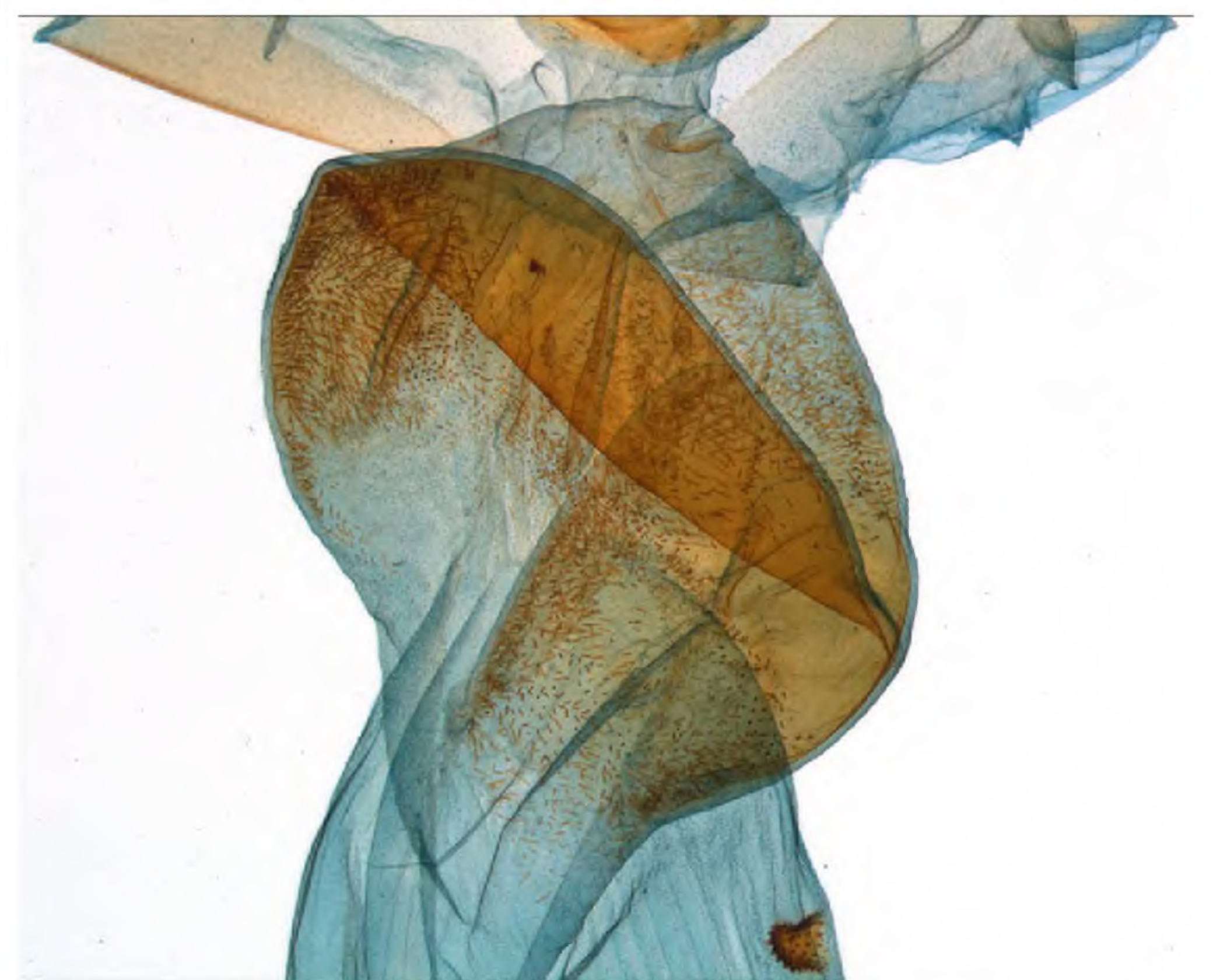
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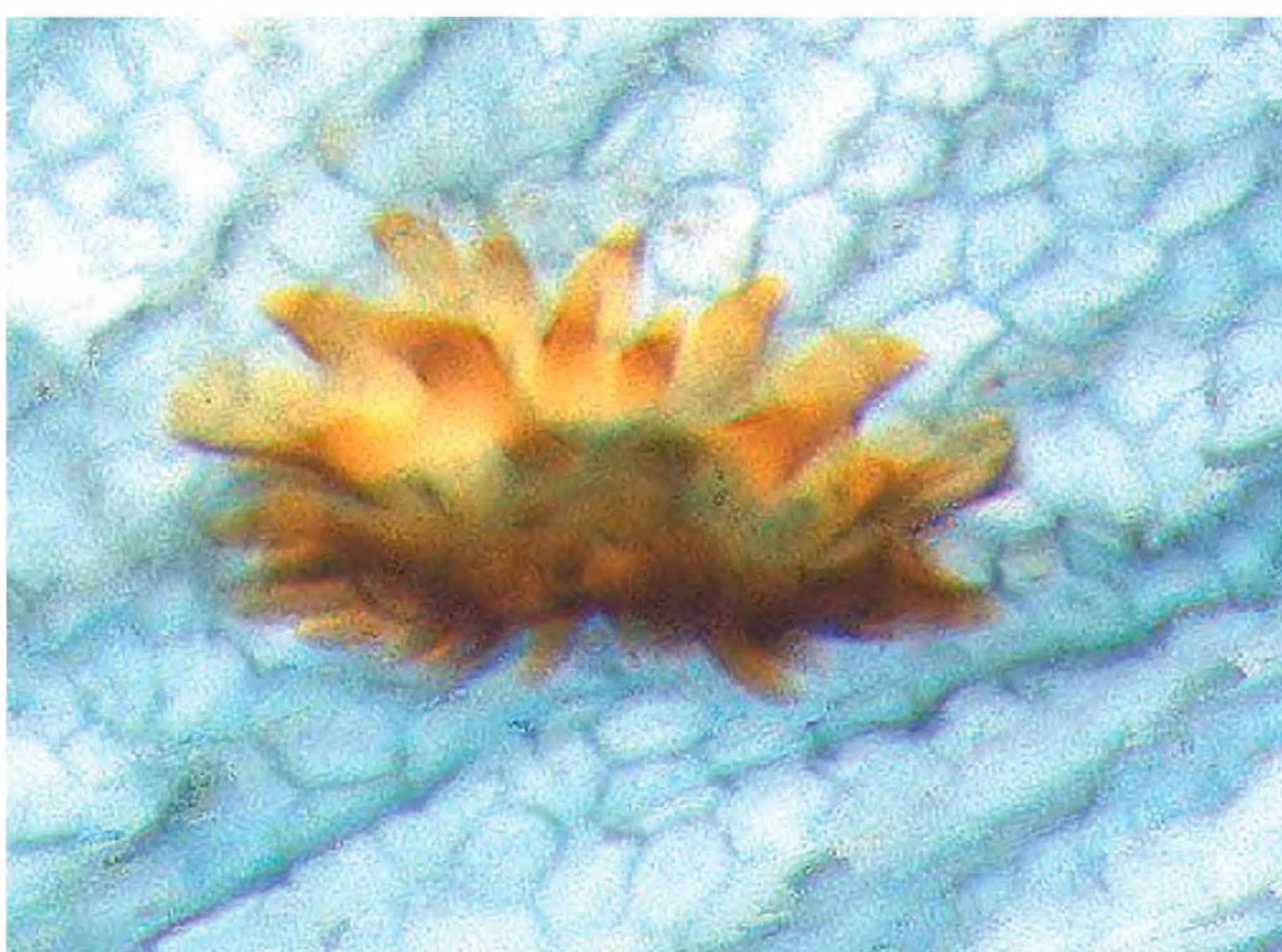
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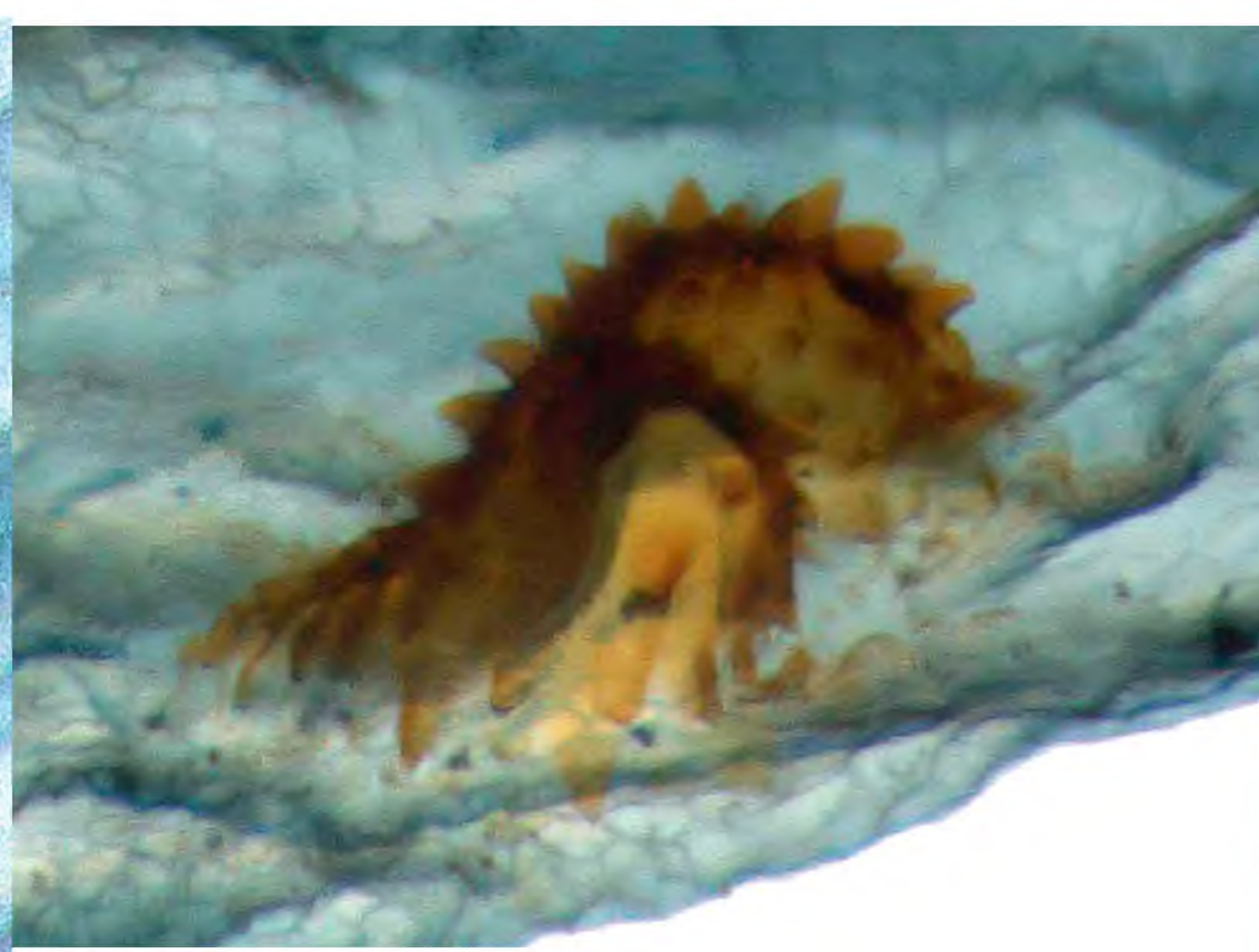
7



8



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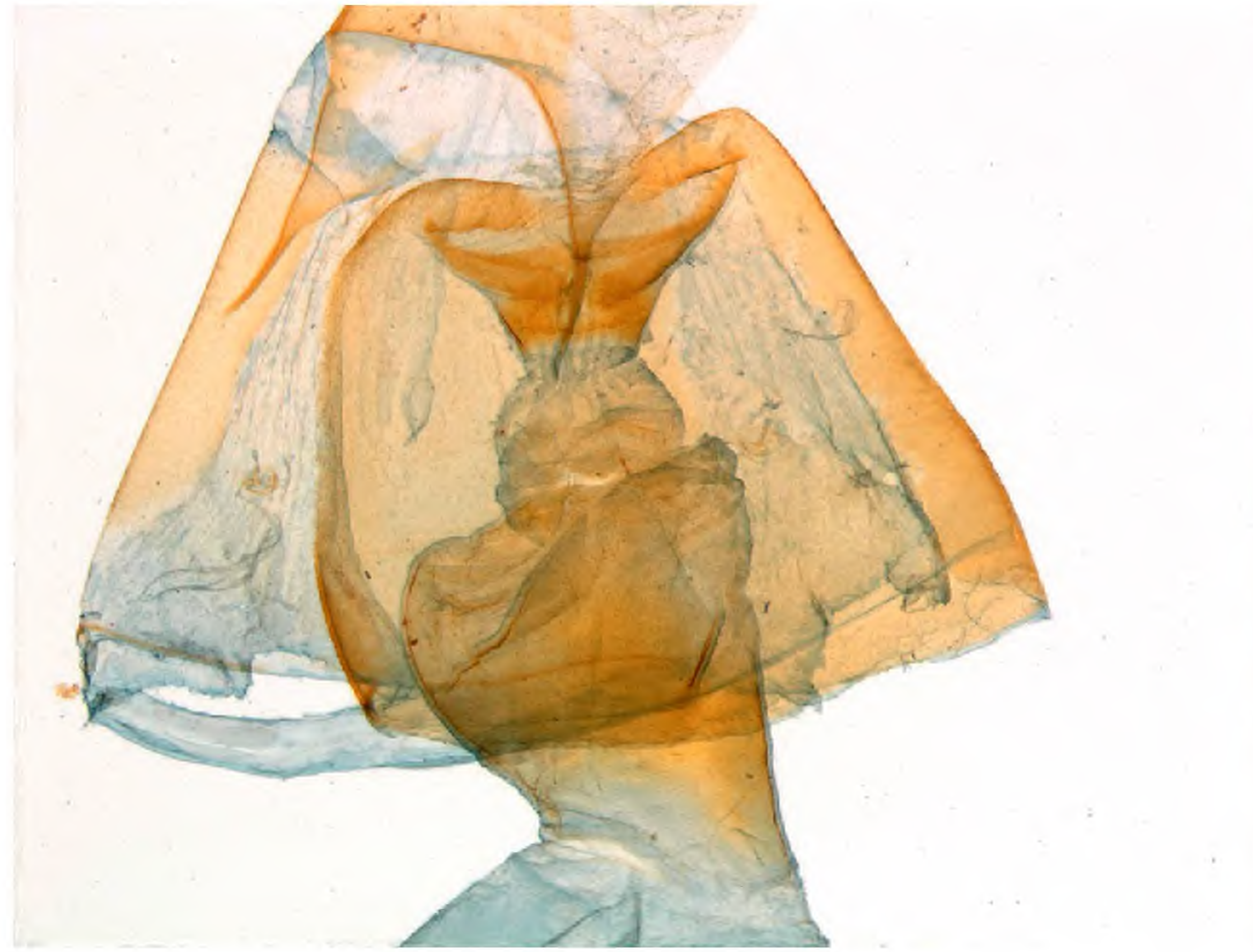
Figures 1-9. Female genitalia of *Cyana* (*Cryptanaema*) species. 1-2 – *C. (Cr.) melanoplaga orcheia* (Rothschild, 1916) prep. BM-RV1515: 1 – Habitus genitalia; 2 – Signum; 3-4 – *C. (Cr.) melanoplaga extrema* ssp. nov. prep. BM-RV1517: 3 – Habitus genitalia; 4 – Signum; 5-6 – *C. (Cr.) aroa* (Bethune-Baker, 1904) prep. BM-RV1521: 5 – Habitus genitalia; 6 – Signum; 7-9 – *C. (Cr.) charybdis* (Bethune-Baker, 1904) prep. BM-RV1525: 7 – Habitus genitalia; 8 – Cervix; 9 – Signum.

Plate 143

DE Vos, R.: The *Cyana* Walker, 1854 species of New Guinea, with description of a new subgenus ...



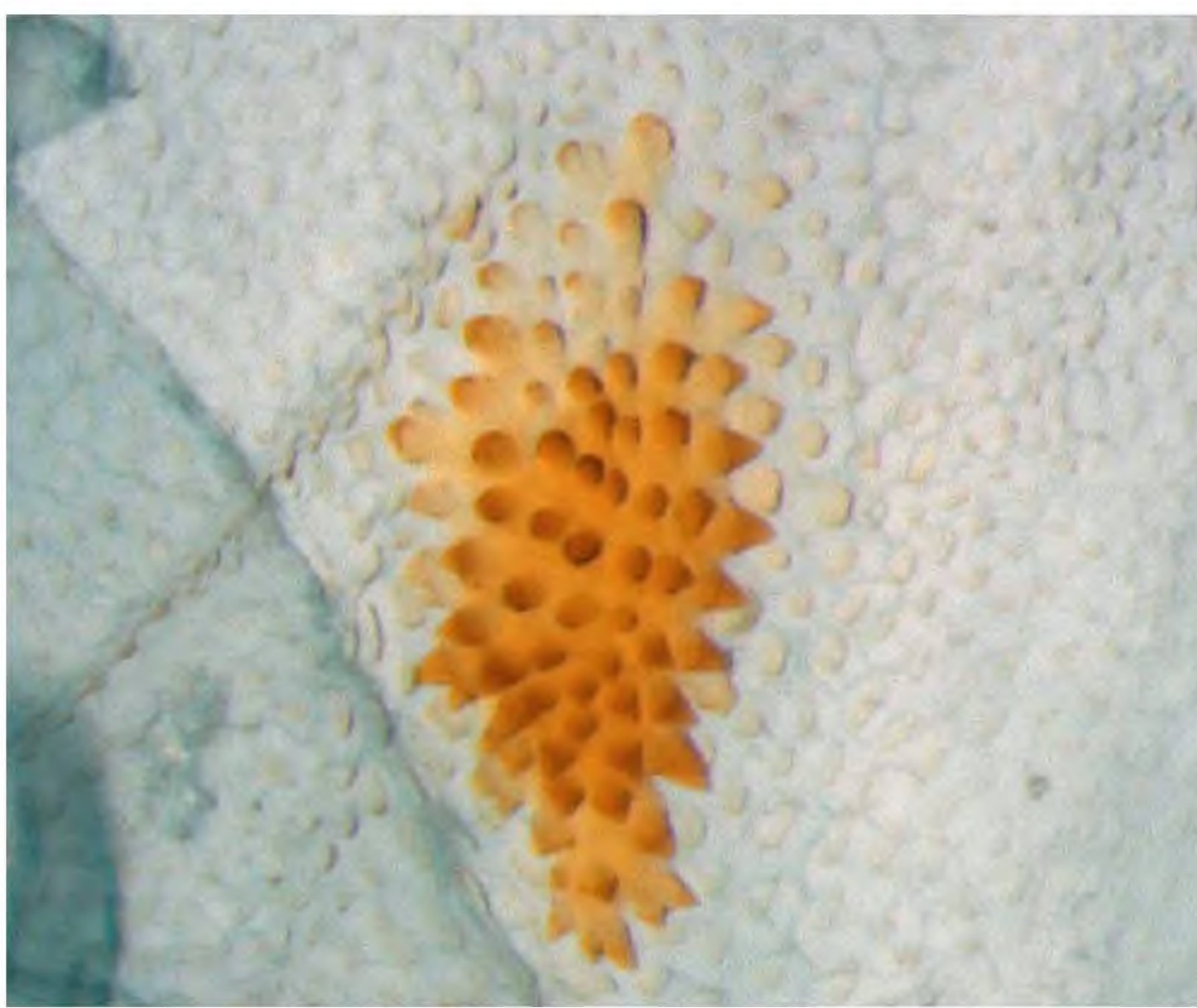
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Figures 1-9. Female genitalia of *Cyana* (*Cryptanaema*) species. 1-3 – *C. (Cr.) fumea* (Hampson, 1900) prep. RV1537: 1 – Habitus genitalia; 2 – Cervix; 3 – Signum; 4-5 – *C. (Cr.) punctistrigosa* (Rothschild, 1913) prep. RV1526: 4 – Habitus genitalia; 5 – Signum; 6-7 – *C. (Cr.) gracilis* sp. nov. prep. KSP-42283: 6 – Habitus genitalia; 7 – Signum; 8-9 – *C. (Cr.) brunnea* (Bethune-Baker, 1904) prep. BM-RV1523: 8 – Habitus genitalia; 9 – Signum.